AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTIN

JANUARY
★ 1943 ★
DIRECTORY
NUMBER

ESTABLISHED
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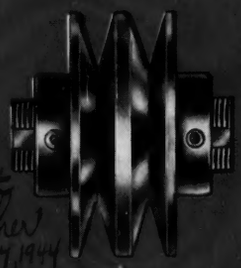
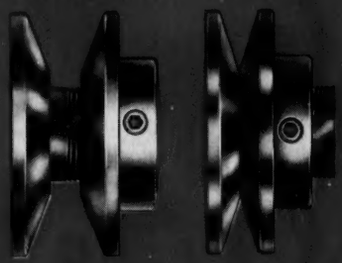
The Answer to your
V-PULLEY PROBLEMS

Cast Iron
Single Groove Spoke Pulley



Cast Iron Two-Groove
Variable Pitch Diameter Pulley



Cast Iron Single Groove
Variable Pitch Diameter Pulley

Gift
Publisher
June 17, 1944

Maurey V-Pulleys, once installed, perform continuously without attention. Their quality is taken for granted, because users quickly recognize the superior Maurey design and sturdiness.

Use Maurey V-Pulleys for trouble-free performance.

MAUREY V PULLEYS

MAUREY MANUFACTURING CORP. 2015 South Wabash Ave. Chicago, Ill.

TS200
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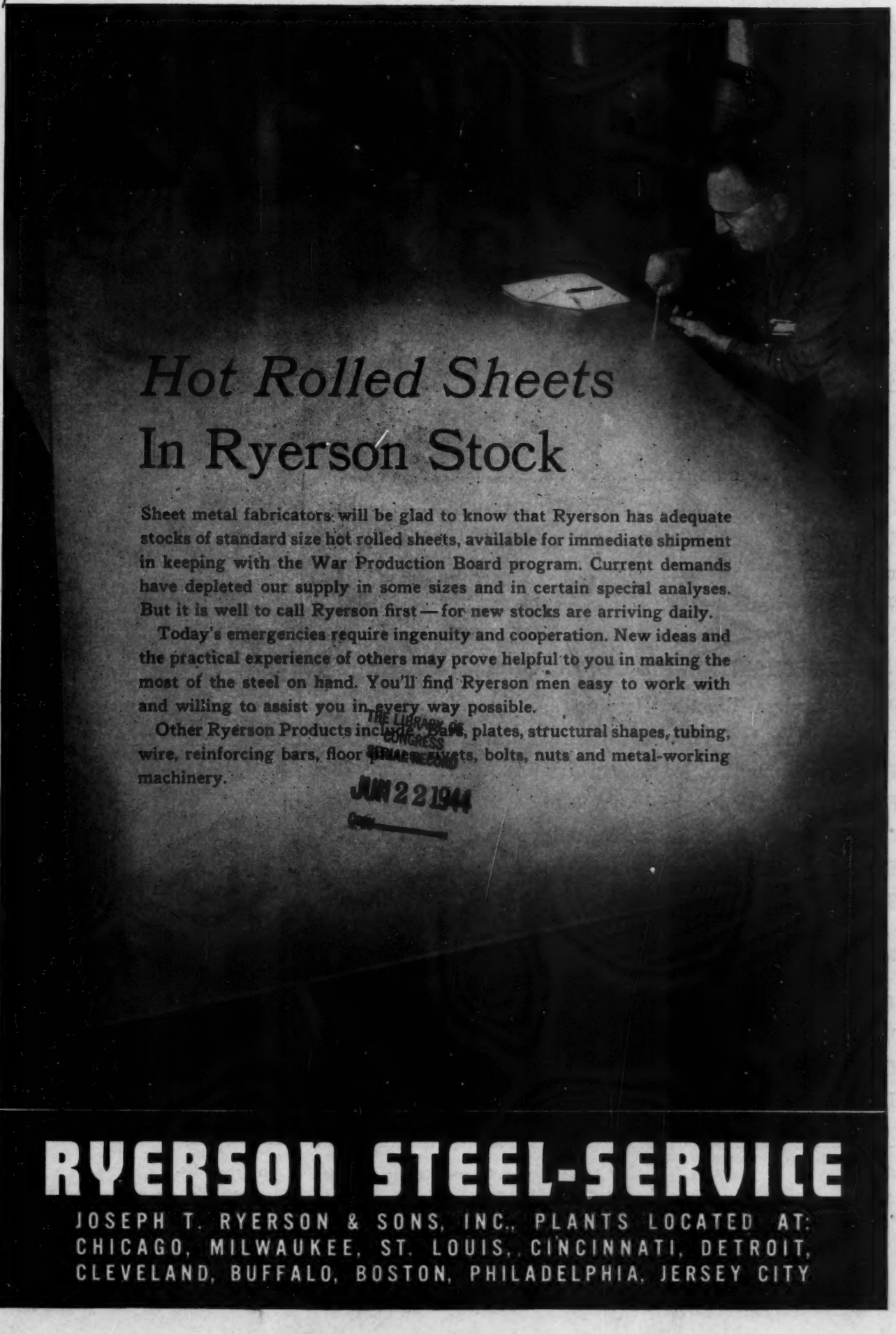

Hot Rolled Sheets
In Ryerson Stock

Sheet metal fabricators will be glad to know that Ryerson has adequate stocks of standard size hot rolled sheets, available for immediate shipment in keeping with the War Production Board program. Current demands have depleted our supply in some sizes and in certain special analyses. But it is well to call Ryerson first — for new stocks are arriving daily.

Today's emergencies require ingenuity and cooperation. New ideas and the practical experience of others may prove helpful to you in making the most of the steel on hand. You'll find Ryerson men easy to work with and willing to assist you in every way possible.

Other Ryerson Products include bars, plates, structural shapes, tubing, wire, reinforcing bars, floor plates, rivets, bolts, nuts and metal-working machinery.

THE LIBRARY OF CONGRESS
JUN 22 1944

RYERSON STEEL-SERVICE

JOSEPH T. RYERSON & SONS, INC., PLANTS LOCATED AT:
CHICAGO, MILWAUKEE, ST. LOUIS, CINCINNATI, DETROIT,
CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 112, No. 1 — January, 1943 — Founded 1880

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ONE year ago few of us had any conception of the restrictions which were to come during 1942. But month after month—all during 1942—new orders, interpretations, limitations, amendments, came thick and fast until in November we realized that an accounting of our situation was much to be desired.

The result is the Priorities Digest in this issue. We wish to point out that this survey of the dozens of orders which affect our industry is truly a digest—we have not tried to publish full orders nor even excerpts of orders because to do so would require more space than we are going to have paper for in 1943.

Each order is sketched in non-technical language to bring out the purpose or the order; the proper procedure to follow in meeting the terms of the order; and the particular material or equipment or activity which the order affects.

Also important, we have tried to show the relationship between orders so that for any given activity the several orders which affect that activity are mentioned. It is hoped that this arrangement will enable the reader to get a quick survey of any given problem.

❖

Space does not permit any digest of the several "pricing" orders which now begin to circumscribe our sales and profits. This setting of maximum prices or methods of pricing didn't get under way until the end of 1942, but we expect there will be much more of this during 1943. If so a Pricing Digest may be in order next year.

And, again, we want to emphasize that we cannot guarantee our analysis—we consulted several sources and authorities, also WPB offices and sent letters—to the best of our knowledge the information is accurate. If you have reason to question, write us or consult your WPB.

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SAL-MO SUPPLY DUCT

Sal-Mo Supply Duct, the conduit material for installing both supply and return ducts in Warm Air Heating, Ventilating and Air Conditioning systems.

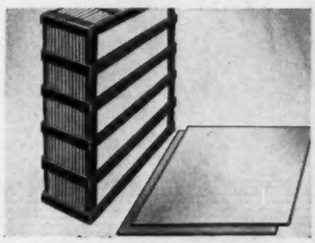
SAVES METAL —With Sal-Mo Supply Duct a saving in metal of approximately 90% is usual in the average Warm Air system. This permits many installations that would be impossible if metal was used.

SAFE, DURABLE, EFFICIENT —Proved by leading laboratories to have a wide margin of safety and durability, Sal-Mo Supply Duct is APPROVED AND LISTED BY UNDERWRITERS' LABORATORIES, INC.

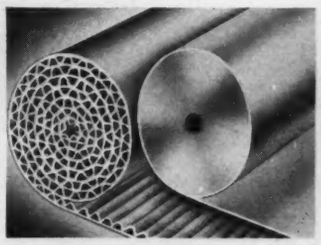
CONVENIENT—Folded and packaged in cartons at the factory, Sal-Mo Supply Duct is easy to handle and erect, easy to ship and store. It saves time.

AVAILABLE PROMPTLY—Furnished in a complete range of sizes for domestic and industrial requirements and also in flat sheets.

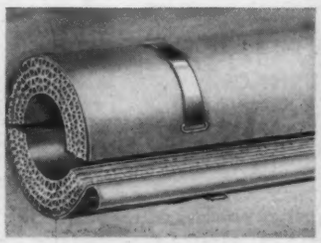
SAL-MO Asbestos Products for Fireproofing, Insulation and Air Conditioning include: Asbestos Insulation Papers in various weights; Corrugated Aircell and Multicell Paper and Asbestos Millboard; Asbestos Pipe Coverings of all types for high and low pressure lines; Asbestos Furnace and Boiler Cements; Range Boiler and Tank Jackets for Hot Water Heaters; Asbestos Ductboard; Asbestos Insulation for supply lines and cold air returns.



ASBESTOS MILLBOARD
For fireproofing and insulating. Furnished in various sizes and thicknesses.



AIR CELL PAPER AND SHEETS
Fireproof insulation for conserving heat.
ASBESTOS PAPER AND ROLLBOARD
Made into smooth, strong white rolls from selected asbestos fibre.



ASBESTOS PIPE COVERING
Uniform, durable, efficient covering for steam and hot water pipes. All standard pipe sizes and thicknesses.

SAL-MO ASBESTOS DUCTBOARD
Developed for constructing cold air return ducts in warm air heating systems. Light in weight, fireproof and moisture proof. Easily applied.

SALL MOUNTAIN COMPANY

176 W. Adams St., CHICAGO NEW YORK, N. Y. HAMILTON, O.

In serving him *we*

IF he wins, we all win; and he needs everything we can give him to help him win. So, in devoting our best energies to war production, we are putting first things first and working for the common good.

Nor are our activities in war production without benefit. We are doing many things in our shop that normally we would never have attempted, and in the process are enriching our experience.

So that when we shall again turn our full production to making heating and air conditioning equipment for homes, we shall be in position to supply a finer line than ever before. For while we are working, we are thinking and planning how we can better serve Moncrief dealers in the years to come.

NO. 16 FORCED AIR FURNACE

CAST FURNACE SERIES C

MONCRIEF

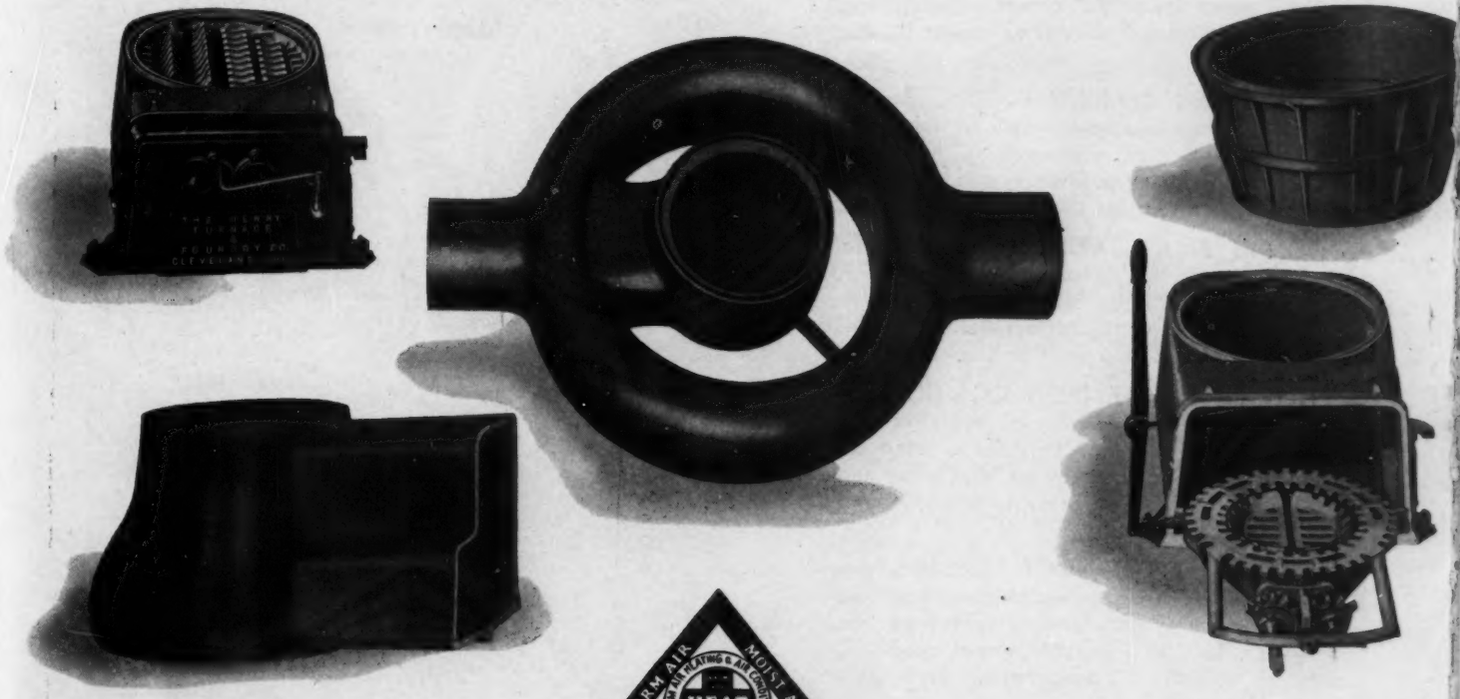
are serving you!

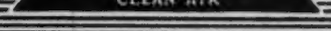
★ ★ ★ ★ ★ ★ ★ ★

Moncrief Repair Parts are Weapons, Too!

ANYTHING that contributes directly or indirectly to put Hitler and Hirohito out of business is a weapon. And what is more important than an efficient Moncrief Furnace to make some home comfortable so the war worker will be kept healthy and enable him to work effectively?

Genuine Moncrief Parts are necessary to a good repair job on a Moncrief Furnace. They fit right, are made of best materials and work better. Which means that the furnace will heat better and last longer. Moncrief Repair Parts are freely available to Moncrief dealers.





FURNACES AND WINTER AIR CONDITIONERS

THE HENRY FURNACE & FOUNDRY CO. • CLEVELAND, OHIO

30 Years Experience

Whitney-

A. AIRCRAFT RIVET SQUEEZERS. Standard, Alligator, Crab, Snake Head, and Pelican types for handling aluminum rivets up to 5/32" size. Pelican type (shown) in 6 sizes from 1¾" to 6" throat depth, other types in a total of 25 different sizes.

B. BLIND RIVET PULLER. For setting various kinds of stem or mandrel-type blind rivets. Chuck pulls directly on center with full bearing around head of rivet. For brazier or flush rivets in 1/8", 5/32", and 3/16" sizes. Removable brace-type handle.

C. NO. 5 JUNIOR PUNCH. A handy tool for all sheet-metal workers. Capacity 1/4" hole in 16 ga. iron. Comes in metal kit box with 7 punches and dies. Has adjustable depth gage, strength, durability, and accuracy. Popular the world over.

D. NOS. 7, 7½, 8 IMPERIAL PUNCHES. General-purpose lever-action punches of proved serviceability. Capacities, 1/4" hole in 1/8", 3/16", and 1/4" iron. Will punch inside 90° corner. Quick-change punches and dies. Lever will not disengage on overtravel.

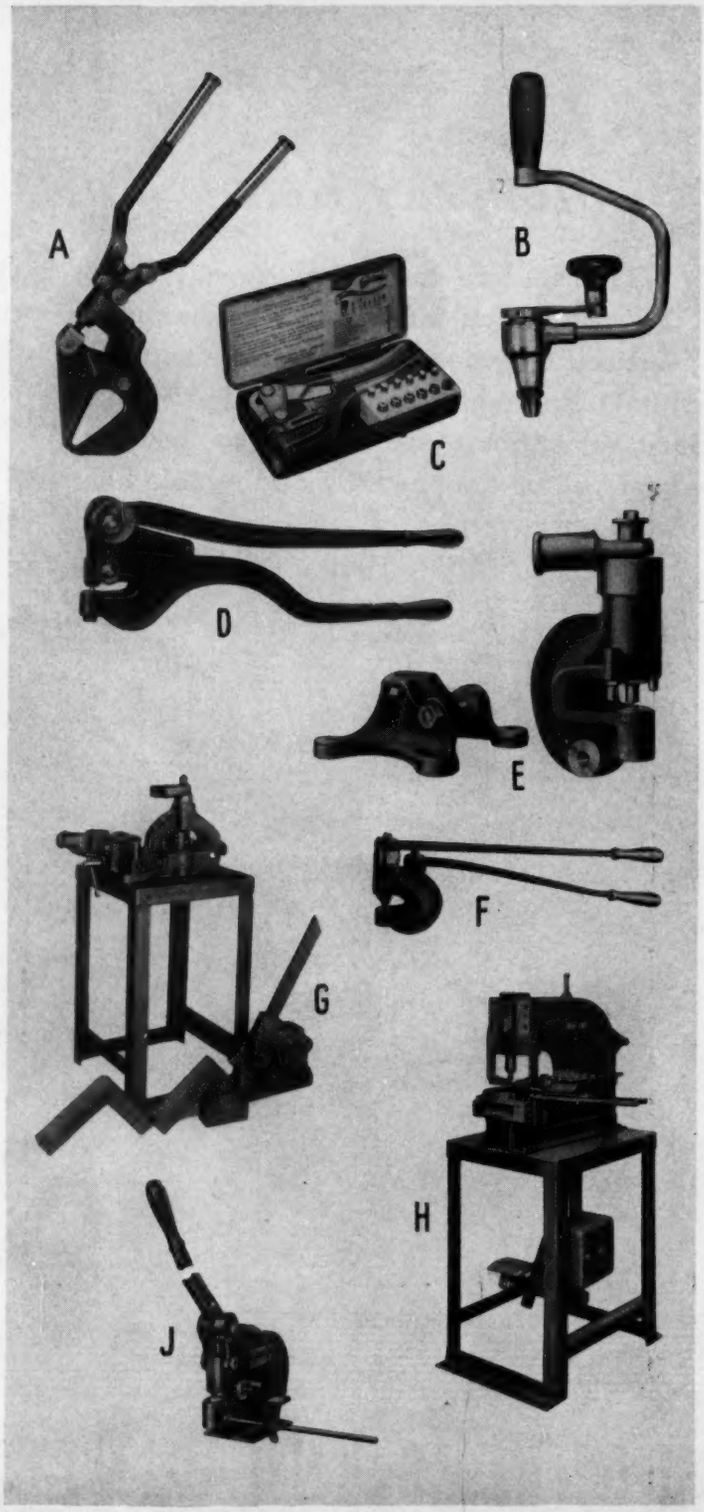
E. NO. 20 BALL BEARING PUNCH. Powerful action gives tremendous power in a light-weight tool. Weight only 20 lbs., yet will punch 1/2" hole in 1/2" iron. Easy to use in any position, or can be mounted on bench base shown for shop service.

F. NO. 10 BALL BEARING PUNCH. Same powerful action for high capacity with light weight. Will punch 3/8" hole in 1/4" iron and weighs 8½ lbs. Available with fixed or ratchet handles. Also bench base for production shop work if desired.

G. NO. 455 ANGLE IRON COMBINATION. Shear, Notcher, and Bender, all mounted on a sturdy, welded-steel stand. Provides greatest convenience, speed, and accuracy for fabricating angle iron pieces. Rugged, and easy to use. Capacity, 2" x 2" x 1/4" angle iron.

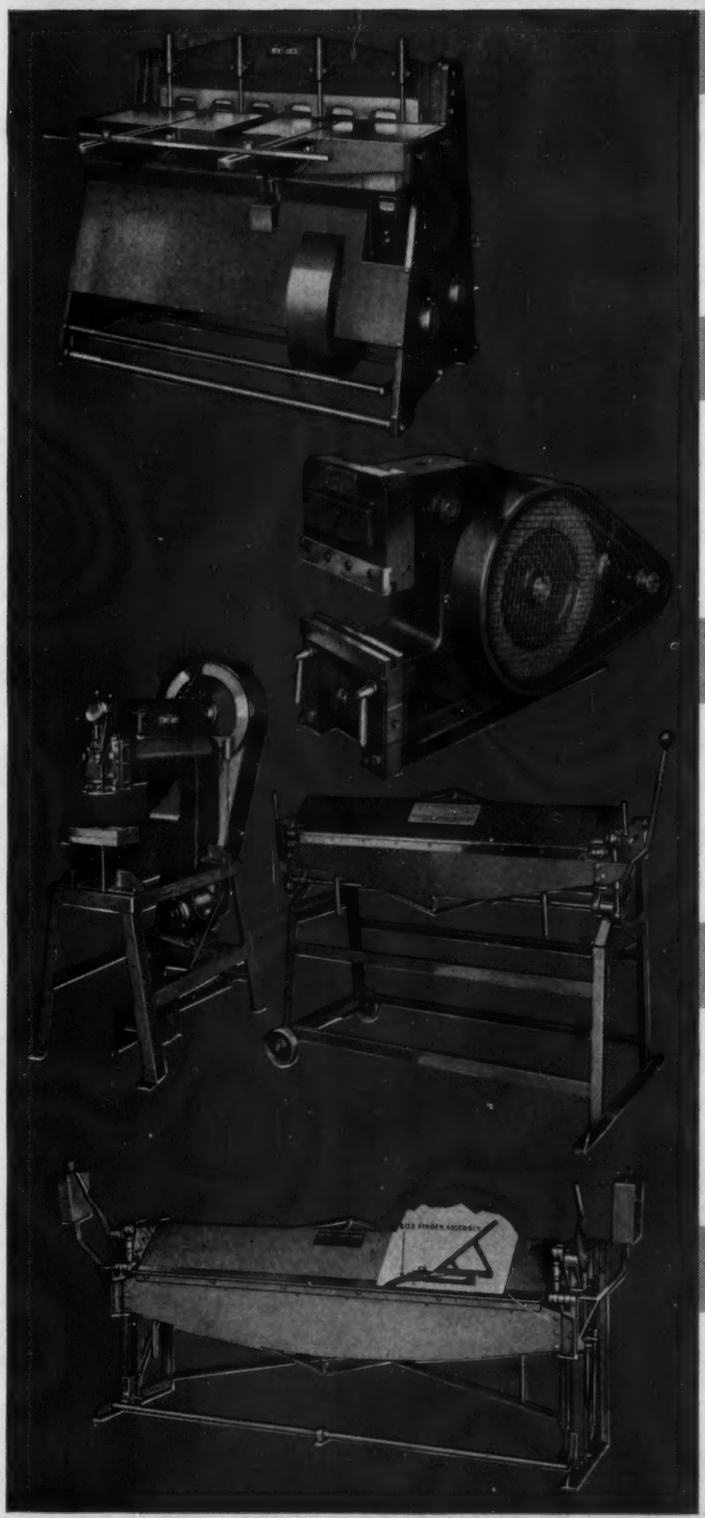
H. TOGGLE ACTION FOOT PRESSES. Powerful linkage multiplies foot power to provide fast, easy action on punching and forming operations. Four sizes — 7", 10", 18", and 24" throat depth. Capacity, 2" hole in 16" gauge iron, 100 holes per minute or better.

J. NO. 17 BENCH PUNCH. Improved model has welded steel frame, lighter weight, new depth and side gauges, greater throat depth, and 6" x 8" work table if desired. Capacity 1/4" hole in 1/4" iron. Highly adaptable and widely used for production line operations.



WHITNEY METAL TOOL COMPANY

-JENSEN Over 80 Useful Products



POWER SQUARING SHEARS

Quick in action, easy to operate, compact in size Made in 36" and 42" sizes, for 14 and 16 gauge iron. Features include a simple, accurate, and positive blade adjustment and a high speed of 180 strokes per minute. Built-in motor drive with push-button control. Side, front, and back gauges fully adjustable. An ideal small-size machine for sheet metal shops.

BENCH TYPE PRESS BRAKE

A new machine, designed for moderate-sized work in jobbing and production shops. It is powerful, extremely sturdy, fast, easy to adjust, accurate, and has a number of distinctive features. Welded steel frame, stroke adjustment 1", throat depth 6¼", 1 h. p. motor, 72 strokes per minute. Die bed 18" long, ram and die shoes machined for standard dies. Floor stand available if desired.

POWER PUNCH PRESSES

Economical machines for powerful, accurate, durable service. Many safety features. Capacity 10 tons, length of stroke 1¼", stroke adjustment 1¾", die space 6". Comes in 2 sizes, 12" and 18" throat depths. Welded steel frame and welded angle iron stand. All parts accurately machined. Flywheel at rear, out of way of work. Built-in motor drive and push-button controls.

BENDING BRAKES

Whitney-JENSEN Brakes are famous for accuracy and durability with light weight, made possible by a distinctive construction design. Smaller sizes are 20 ga. capacity, 49" length, in bench or floor types, plain or combination models. Larger sizes are in 12, 14, and 16 ga. capacity, 4, 5, 6, 8, and 10-foot lengths for combination work on box and pan as well as all types of straight bending.

AND MANY OTHER ITEMS . . .

With 30 years experience, the Whitney-JENSEN line includes over 80 different useful items for the sheet metal and allied trades. Write for the new 48-page Whitney-JENSEN Aircraft Tools Catalog showing the latest developments in our most popular modern tools.

91 FORBES ST. • ROCKFORD, ILL.

KEEPING THE HOME FIRES BURNING
Has Become of Secondary Importance

Today it is most important that our abilities and facilities be devoted to the gigantic task of serving America as a Nation —and we are proud that a considerable portion of our Armed Forces is experiencing the comfort of WEIR heat.

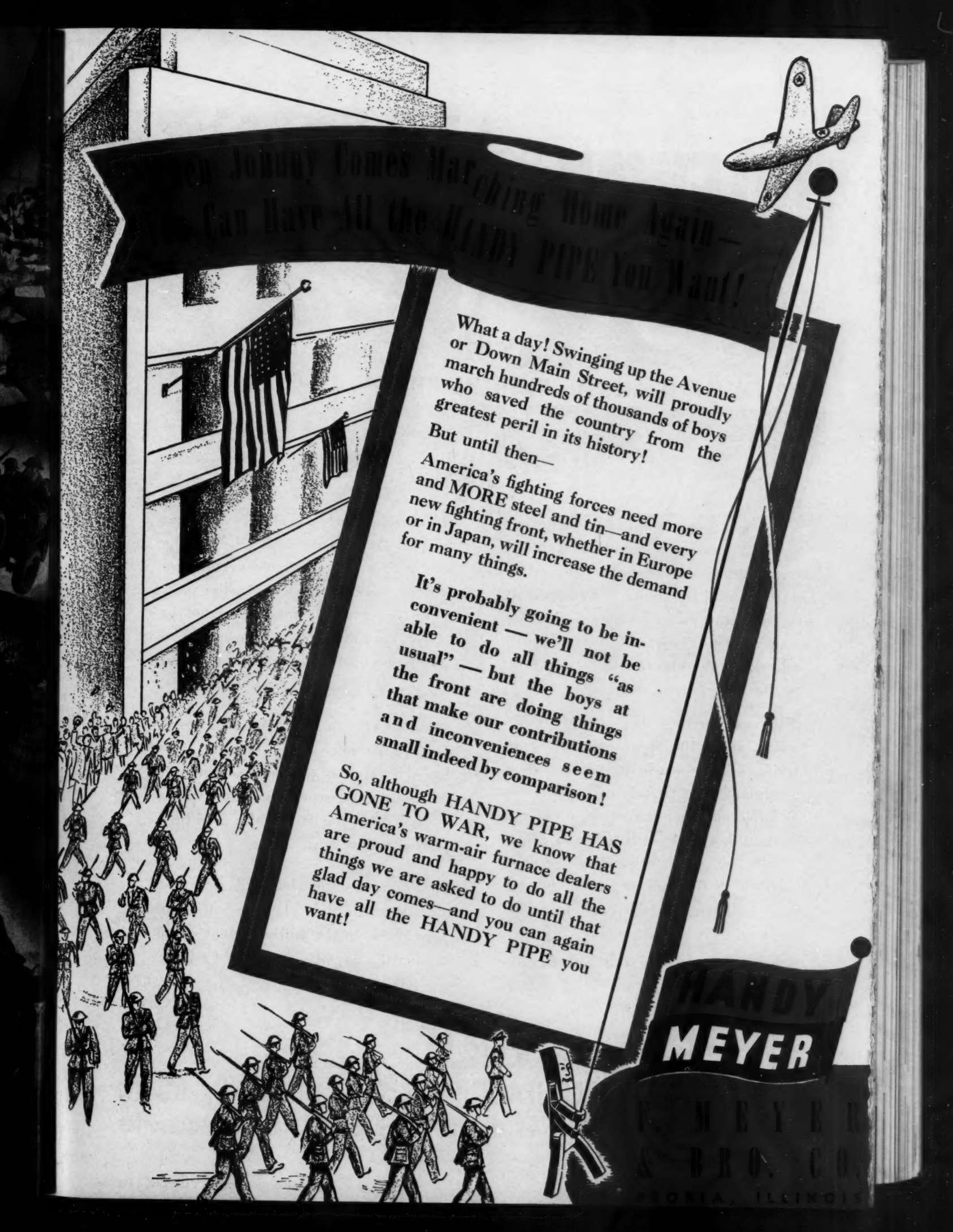
While, in these times, the home front must be of secondary importance, we are not overlooking the fact that essential civilian needs must also be met.

In addition, our Engineering Department and Research Department are hard at work in preparation for the days when "It's Over, Over There"— and WEIR-MEYER units will again take their place in making American homes the best heated and most comfortable in all the world.

In the meantime, we welcome inquiries — whether your requirements be for 50,000 or 1,000,000 Btu/hr.

WEIR MEYER

THE MEYER FURNACE COMPANY
PEORIA, ILLINOIS


When Johnny Comes Marching Home Again—
He Can Have All the HANDY PIPE You Want!
What a day! Swinging up the Avenue or Down Main Street, will proudly march hundreds of thousands of boys who saved the country from the greatest peril in its history!
But until then—
America's fighting forces need more and MORE steel and tin—and every new fighting front, whether in Europe or in Japan, will increase the demand for many things.
It's probably going to be inconvenient — we'll not be able to do all things "as usual" — but the boys at the front are doing things that make our contributions and inconveniences seem small indeed by comparison!
So, although HANDY PIPE HAS GONE TO WAR, we know that America's warm-air furnace dealers are proud and happy to do all the things we are asked to do until that glad day comes—and you can again have all the HANDY PIPE you want!
HANDY
MEYER
F. MEYER & BRO. CO.
PEORIA, ILLINOIS

A year ago no one would have believed that what has happened in 1942 could have happened to us in this country in our splendid isolation. But happen it has, and now we know that this is OUR war, a tragic, cruel war dwarfing all others, a war to be fought by all of us to the bitter, victorious end.

This company is well aware of its responsibilities in this conflict. The materials of war are being produced in this plant on a round-the-clock basis. Employment and payrolls far exceed normal times. We will spare no effort within our power to increase war production to the fullest extent as our part in hastening the conclusion of the war.

What of the register business during the war period? Frankly, we do not know. Time alone will tell. To the extent that war demands permit, we will be here to serve as in the past. Your orders will be appreciated as always, and no effort will be spared to serve the trade to the fullest extent permitted by Government regulations.

What of the future? When the war shall have been won, then is time enough to talk of the future. But let it be said that we expect to resume where we left off — leaders in the field by a substantial margin.

In the meantime, let's all put first things in the first place — work and buy bonds to the fullest extent — to hasten the day of victory.

H&C

HART & COOLEY MANUFACTURING CO., HOLLAND, MICH.

World's Largest Manufacturers of Registers, Grilles and Furnace Accessories

THE Beginning OF Better Steel

Get in the SCRAP
THE SUPERIOR SHEET STEEL CO. - CANTON, O.
TRADE MARK
REG. U.S. PAT. OFF.
THE SUPERIOR SHEET STEEL CO. - CANTON, O.
TRADE MARK
CHECKER COAT
REG. U.S. PAT. OFF.
CONTINENTAL SUPERIOR STEEL

WHAT SUPERIOR IS DOING BETTER FOR WAR TODAY, IT WILL DO BETTER FOR YOU TOMORROW

The pressure of war demand for high quality steel is emphasizing the importance of scrap. To the layman scrap may mean a short cut in steel making; but to the metallurgist scrap is the secret of quality control. Sorting scrap by scientific selection enables the steel maker to control the properties of open hearth steel to a precision not practical in any other way.

SUPERIOR sheets have always been made largely of open hearth, special analysis steel in which scrap is an important ingredient. Superior's specialized experience in the production of steel sheets of all kinds means a *superior* product.

Remember, one ton of your idle scrap makes two tons of fighting steel. Search your plant again and again.

THE SUPERIOR SHEET STEEL COMPANY
CANTON, OHIO
Division of Continental Steel Corporation, U.S.A.

Sold under well-known trademarks, SUPERIOR steel sheets are made with more than 30 different kinds of surface treatments, finishes and coatings to suit the needs of manufacturers and sheet metal workers.

SUPERIOR

Need Sheets for War Work? CALL OSBORN

Because ours has been a nation ot plenty, we more keenly miss the things which today's war needs make it necessary for us to do without. In our everyday lives this means getting along without new automobiles, refrigerators, etc. In business, we must all do with fewer of the products we had come to rely upon.

Since our entry into the war, the nation's metal distributors have been unable to supply sheets in the usual, unlimited quantities. We know this shortage has caused our trade much inconvenience, as well as some hardship and so are glad to report that the situation is now somewhat relieved. Today, although their sale is still governed by prevailing priority regulations, Golden Star Galvanized and Hot Rolled Sheets are more promptly available than they have been in more than a year.

Do you use steel sheets in your war work? If so, the chances are that OSBORN can supply the sizes and gauges you need right from stock.

THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO
BUFFALO • CINCINNATI • DETROIT
Distributors of Metals and Metal Products

A DEPENDABLE SOURCE OF SUPPLY FOR 84 YEARS

When the GREEN light shows

We are all in this war *to win*... nothing else matters. To this end business must be conducted on the basis of doing the best we can with what we have . . under the handicaps imposed by necessary Government restrictions and material shortages. We must all be satisfied to work harder, earn less and give more of time, energy and money to the war effort and thereby speed Victory.

In the meantime, as we work and save and sacrifice we also have the obligation to look and plan ahead as far as we can for the post-war period.

For this post-war period the RYBOLT Organization has no "frozen" formulas... no boxed and labeled plans. It is too early for that.

All we can say is that we are keeping in close touch with the newest developments and trends in warm air heating... doing a constant and consistent job of engineering, research and experiment... keeping our organization fluid and flexible so that it can easily and quickly be diverted into the channels by which the most advanced and practical heating equipment can be produced... when the world is ready for it.

With higher standards of efficiency and service than ever before you can count on RYBOLT to be ready to go... *when the green light of Peace shows!*

Save or Slave—
Buy War Bonds

THE RYBOLT HEATER COMPANY
615 MILLER STREET ★ ASHLAND, OHIO

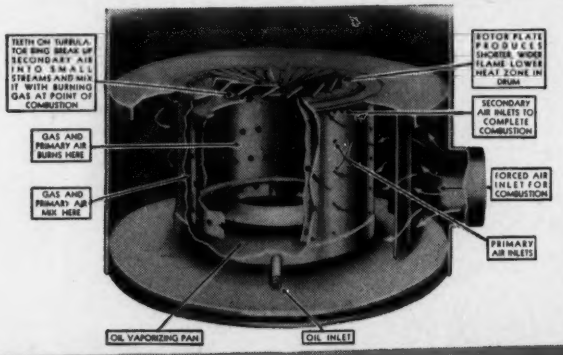
Monogram AUTOMATIC OIL

featuring

• "VAPORIZING" BURNER

You get the ***highest known operating efficiency*** in the exclusive MONOGRAM "Vaporizing" Burner. By converting the oil to gas and mixing with air before combustion, this burner produces a flame that is hotter, cleaner, more efficient. A gas flame made from oil—with all the high burning qualities of gas.

MONOGRAM TURBULENT FLAME

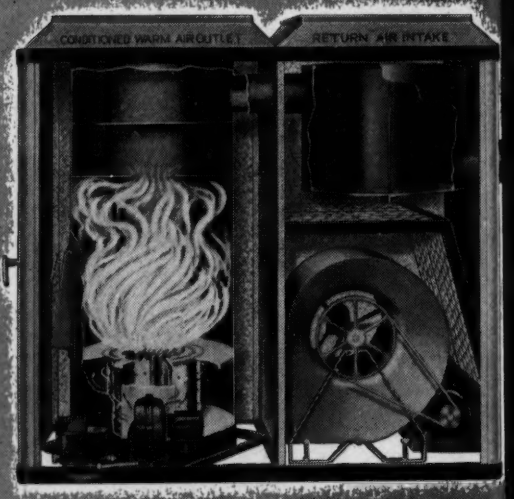

TEETH ON TURBULATOR RING BREAK UP SECONDARY AIR INTO SMALL STREAMS AND MIX IT WITH BURNING GAS AT POINT OF COMBUSTION
ROTOR PLATE PRODUCES SHORTER, WIDER FLAME, LOWER HEAT ZONE IN DRUM
SECONDARY AIR INLETS TO COMPLETE COMBUSTION
GAS AND PRIMARY AIR BURNS HERE
FORCED AIR INLET FOR COMBUSTION
GAS AND PRIMARY AIR MIX HERE
PRIMARY AIR INLETS
OIL VAPORIZING PAN
OIL INLET

WINTER AIR CONDITIONERS

Model No. 250—150,000 B.t.u.

In brown ripple, insulated cabinets
Model No. 125— 90,000 B.t.u.
Model No. 150—120,000 B.t.u.
Model No. 250—150,000 B.t.u.

Easy access to inner chambers through panels, front and rear. Double Baffle in heating drum, Automatic Oil-Air Control set, Automatic Humidifier, Combination Limit Control and Blower Switch and Automatic Draft Regulator—Standard equipment.



Exclusive MONOGRAM Double Baffle Feature

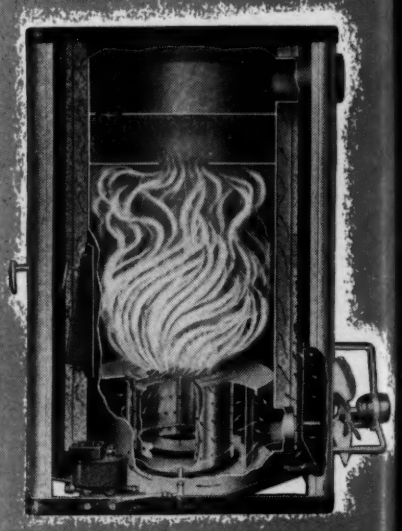
BOOSTER GRAVITY UNIT

Model No. 200—125,000 B.t.u.

In brown ripple, insulated cabinets.

Model No. 75— 75,000 B.t.u.
Model No. 100— 90,000 B.t.u.
Model No. 200—125,000 B.t.u.

Easy access to inner chamber and heating drum through panel in front. Double Baffle in heating drum, Automatic Oil-Air control set, Automatic Draft Regulator—standard equipment. Limit control, Automatic Humidifier—optional.



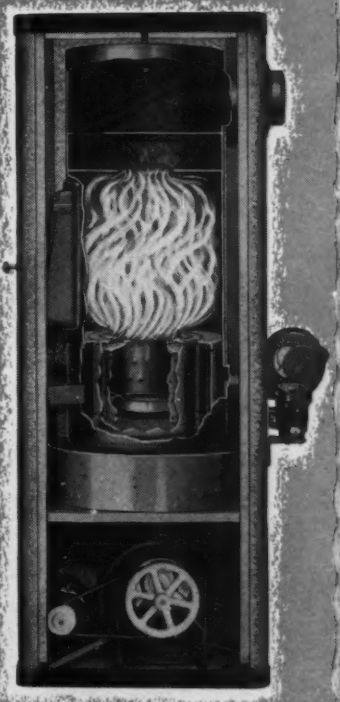
Exclusive MONOGRAM Double Baffle Feat

IC OIL BURNING FURNACES

"A" SERIES STANDARD MODEL

Model 38A130—37,440 B.t.u.
Model 38A140—50,200 B.t.u.
Model 38A150—72,434 B.t.u.

Brown ripple with chrome trim. Burner parts removable through one-piece door. Side panel doors for more direct radiation. MONOGRAM "Vaporizing" burner. Air-tight heating drum. Exclusive Double-Baffle feature.



FULL FORCED UPRIGHT AIR CONDITIONER

Model No. 104, 70,000 B.t.u. furnished complete with Automatic Oil-Air Control set, Combination Limit Control and Blower Switch and Automatic Draft Regulator and full insulated cabinet. Automatic Humidifier, Filter—optional. Mechanical draft blower does not operate low fire position as .02 draft is sufficient for a clear low fire.

AUTOMATIC OIL BURNING HOT WATER HEATER

Extra large galvanized storage tank plus extra fast recovery rates assure plenty of hot water at all times. 100% automatic. Aquastat control has three settings, Warm, Medium, Hot; water temperatures 110° to 140° to 160° respectively. 5-inch MONOGRAM "Vaporizing" oil burner. Complete boiler insulation reducing heat loss to minimum. Automatic draft regulator furnished. Outer cabinet in green ripple, black trim. Drop door gives easy access to burner parts. Outside thermometer.

Monogram

ADDITIONAL MONOGRAM LINES

U. S. Army Cannon Heaters
No. 5 U. S. Army Ranges
100 lb. Capacity Magazine Heaters
Coal Burning Space Heaters
Coal Burning Ranges
Oil Burning Space Heaters
Oil Burning Water Heaters
Oil Burning Furnaces

The QUINCY STOVE MFG. CO.

QUINCY ILLINOIS

Important Announcement!

Effective January 1, 1943, the name of Scully Steel Products Company was changed to United States Steel Supply Company

Scully... for many years a member of the family of United States Steel Subsidiaries — now takes a name which more fully represents its ability to serve you with a comprehensive list of steels and steel products.

Only the name has been changed. The same personnel in our eight conveniently located warehouses will continue to do their best to take care of your needs.

The prompt and courteous service that has made the name "Scully" famous will be maintained.

The addresses and phone numbers of our warehouses remain the same.

As always, we stand ready to give our customers every help we can in getting the right steel as promptly as possible.

UNITED STATES STEEL SUPPLY COMPANY

Distributors of Steel and Steel Products

CHICAGO
BRunswick 2000
Teletype CG. 605

BOSTON
STAdium 9400
Teletype BRTN 10

CLEVELAND
HEnderson 5750
Teletype CV 153

ST. PAUL-MINNEAPOLIS
NEstor 2821
Teletype STP 154

PITTSBURGH
CEdar 7780
Teletype PG 475

BALTIMORE
GILmore 3100

ST. LOUIS
MAin 5235

NEWARK, N. J.
BIgelow 3-5920—BErgen 3-1614—REctor 2-6560
Teletype NK 74

USS

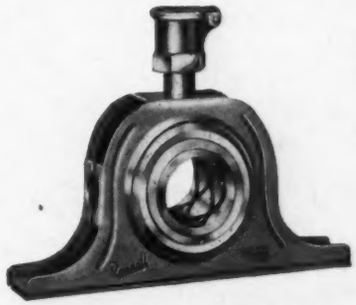
UNITED STATES STEEL

Randall

For over a third of a century, Randall has been supplying more and more of industry's important bearings. Countless Randall Graphite Bronze Bearings are in use today, and two million Randall Pillow Blocks have been placed in service on almost every type of industrial equipment.

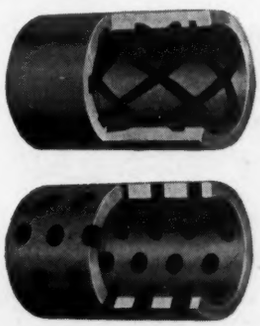
Randall Pillow Blocks are self-lubricating and self-aligning. Manufactured with single or double oil reservoir, they are quiet, economical and dependable, and operate with a minimum of attention.

Submit your bearing problems for our recommendation. Our service is available to your engineering department without obligation. (Send for No. 42 Pillow Block catalog.)

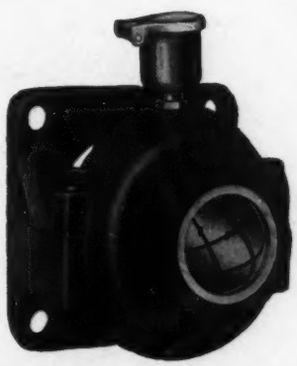


Randall One Piece Steel Housing Pillow Block with single or double oil reservoir, mounts in any position.

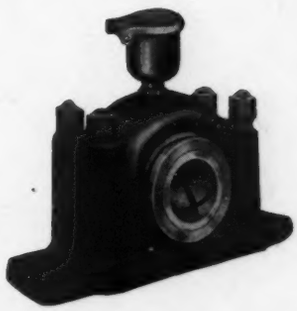
Randall Standard Pillow Block is a self-aligning, self-lubricating, all-purpose, rugged pillow block that will last a lifetime. Single reservoir only.



Cut-away sections of two of many types of Randall Graphite Bronze Bearings. Send for new complete Graphite Bronze Bearing catalog.



Randall Flange Pillow Block is ruggedly constructed with ample safety factor for the most severe applications. Has double oil reservoir.



Randall Universal Pillow Block will operate in any position under severest conditions. Has double oil reservoir.

RANDALL GRAPHITE PRODUCTS CORPORATION

Dept. 110 609 W. Lake St. Chicago, Ill.

Repair Parts

FOR ALL HEATING UNITS

IN STOCK FOR IMMEDIATE SHIPMENT
GUARANTEED TO FIT

ALSO A COMPLETE STOCK OF

ASBESTOS PAPER & CEMENTS
BLOWERS & CONTROLS
DRAFT REGULATORS
FIBERGLAS INSULATION
FILTERS—DUSTOP
FITTINGS & SUPPLIES
FURNACE CLEANERS
HUMIDIFIERS
REGISTERS
TANK HEATERS
TIN FITTINGS

IN FACT WE CARRY EVERYTHING TO ENABLE YOU TO MAKE A JOB COMPLETE

BRAUER
REPAIR PARTS
STOVE
FURNACE
BOILER
OIL
STOVE
RANGE

ORDER ALL FROM

A. G. BRAUER SUPPLY CO.

2100 Washington Ave., St. Louis, Mo.

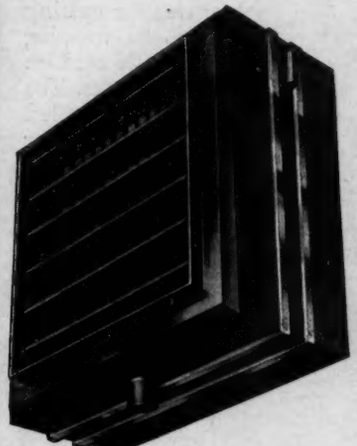
FOR LOW-COST HEATING, QUICK INSTALLATION AND METAL CONSERVATION

DIRECTHERM
UNIT HEATERS STOKER-FIRED

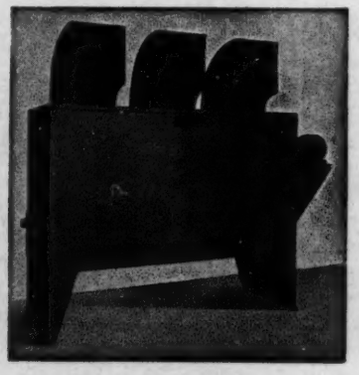
IT IS a self-contained unit and can be installed or moved in a few hours. No duct work, radiators, or pipe are necessary.

To tend a Directherm requires a minimum of attention. Once the automatic controls are set, they need not be changed. An unskilled man can take care of it . . . important in these days of labor shortage.

Made in 6 sizes (300,000-1,700,000 BTU).

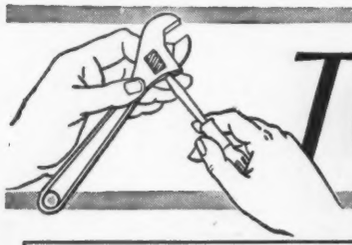


THE AIRVECTOR
A propeller type fan unit for ceiling suspension or mounting from the floor on a recirculating stack.



THE AIRHEATER
A centrifugal fan heater of large capacity and high efficiency for floor setting (as illustrated), wall or ceiling mounting.

AIRTHERM
MANUFACTURING COMPANY
706 S. SPRING AVE. · ST. LOUIS, MO.



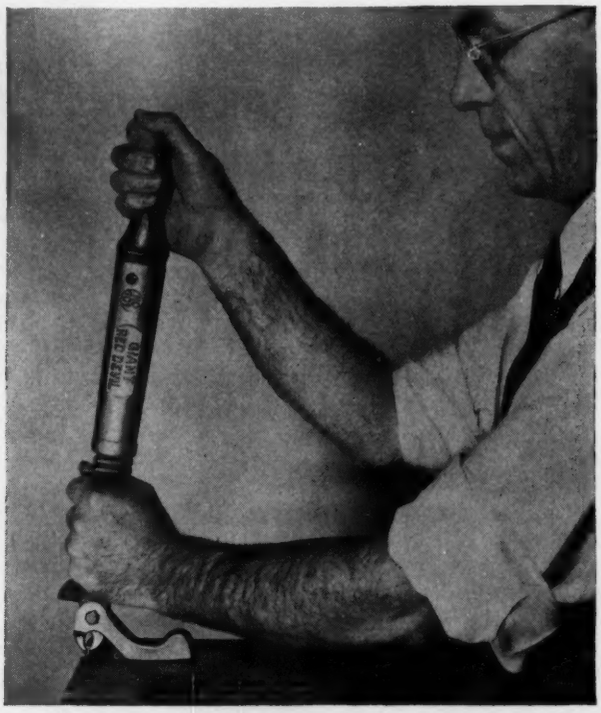
TOOL NOTES

Maintenance and Repair Suggestions to Prolong Tool Life

No. 8 HOW TO USE CRESCENT NAIL PULLERS

While Nail Pullers are simple tools a few tips on their proper use may be timely, considering their increased use due to accelerated industrial activity.

● Once an operator gets the "knack" of handling a Nail Puller, surprising speed is attained. The two motions involved in withdrawing a nail blend into one continuous action with a little practice. The first step is illustrated below. With Puller held at the angle shown and jaws positioned so as to just straddle the nail head, drive the Rammer down with sufficient force to embed the jaws for a grip below the nail head. Now pull the handle toward you. The first movement closes the jaws to grip the nail and then lifts the nail out with a prying action as seen in the second illustration above and opposite. There should be no pause between the first and second operations once the operator becomes proficient. Nail Pullers work best with the width of the jaw blades *across* rather than with the grain of the wood.



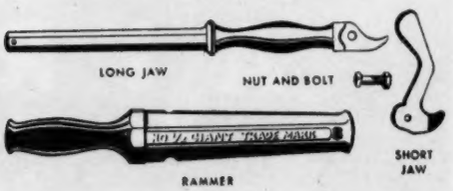
Crescent's Giant Red Devil Puller, No. 101, is equipped with a strap cutter for cutting the metal strapping frequently used on packing cases. The illustration at left shows the proper method of use. This cutter is not intended for cutting wire, nor are any Crescent Nail Pullers designed for pulling spikes.

Repair Parts are available for Crescent Nail Pullers. Order by name of part and number of tool. (see below).

CRESCENT TOOLS
Give Wings to Work

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

PARTS FOR NAIL PULLERS



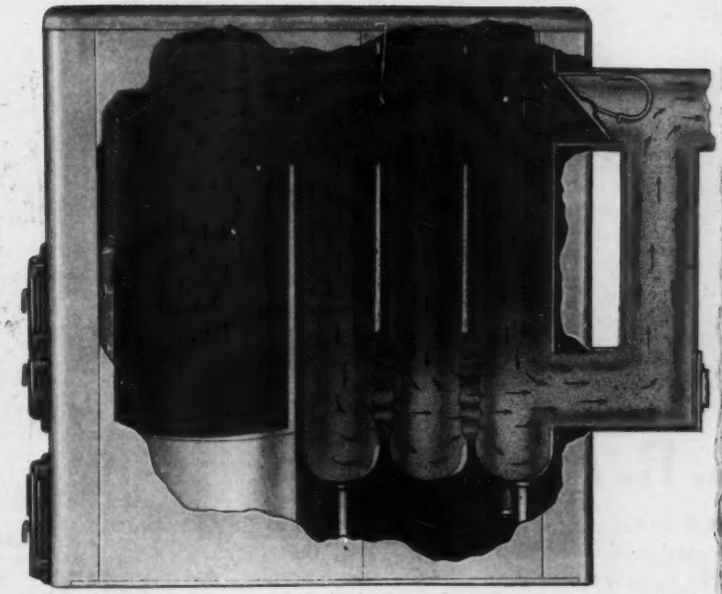
Leader

ings as high as 25% to 40%.

KOOLSTACK FURNACES PUT MORE HEAT TO WORK

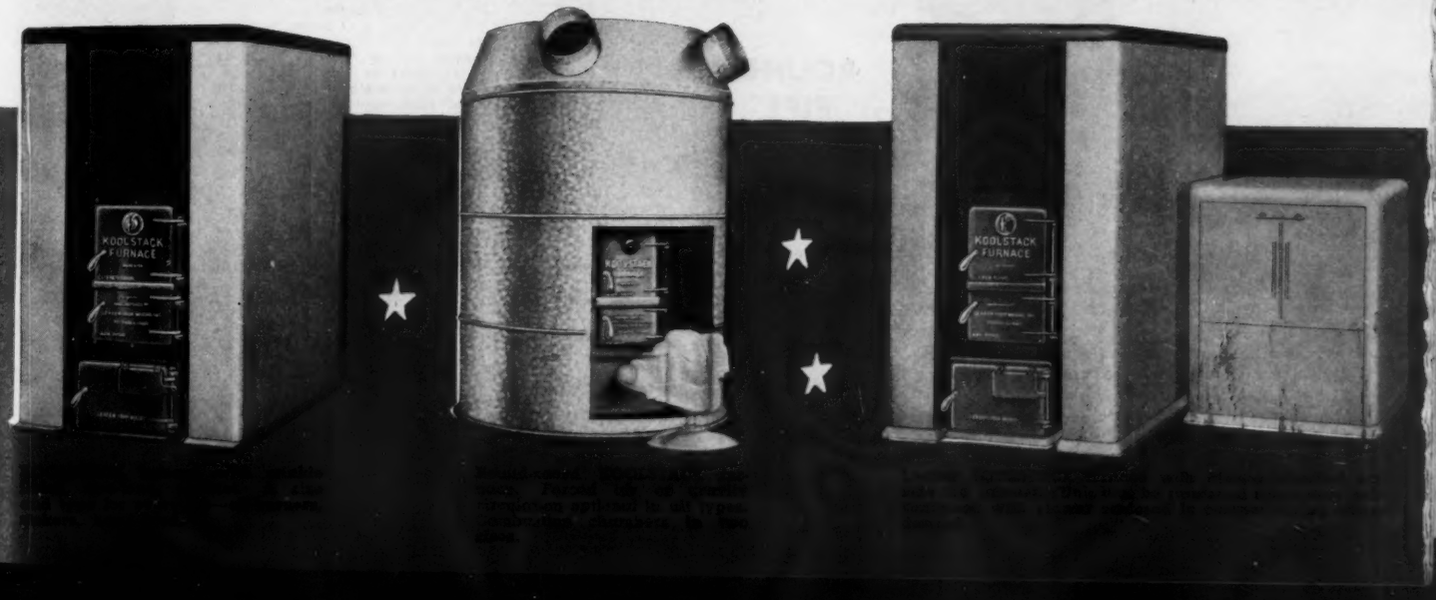
Economy is the greatest sales advantage of the day—in any field, in all fields. Home owners everywhere WANT economical heating. And they can readily appreciate the savings made possible by the Leader Automatic Damper. Sell the KOOLSTACK line—the line that enables you to give customers EXACTLY what they want.

Cabinet or round-cased type . . . For oil burners, stokers, hand-fired . . . Forced or gravity circulation . . . In sizes for heating loads from 50,000 to 200,000 B.t.u.'s. . . . All welded construction—permanently gas and smoke tight . . . Quickly, easily handled and erected by one man.



The KOOLSTACK Principle is amazingly simple. Notice the cutaway view above. When the firing period starts, a momentary charge of heat, shot direct to the chimney, creates proper draft. The heat closes the PATENTED AUTOMATIC DAMPER, thereby sending the hot gases through the economizer sections until every possible unit of useful heat is absorbed. The gases then pass out the bottom to the stack at a moderate pre-determined temperature. No complicated mechanism—nothing to get out of order. Write or wire for money-making facts about the Leader KOOLSTACK line.

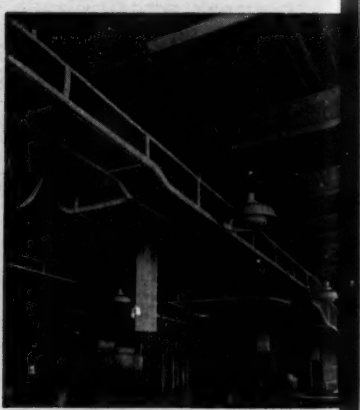
LEADER IRON WORKS, INC., DECATUR, ILLINOIS



GRANT WILSON PRODUCTS

DUX - SULATIO

Comes complete, nothing else to buy. It is shipped with enough adhesive and tape to complete application. A flexible, efficient duct insulating blanket ½" thick having a K factor .27 B.t.u. Comes complete with Asbestos joint and corner tape and adhesive for quick and easy application to metal ducts and casings. Dux-Sulation comes 36" wide in a roll containing 100 square feet. Eliminates use of screws, bolts or wire. Easy to apply and a very efficient insulation against temperature losses, condensation and noise travel. Is asbestos protected. Will not rot, chip or crack. A sure prevention against black iron rust or corrosion. Send for Dux - Sulation Bulletin 406.



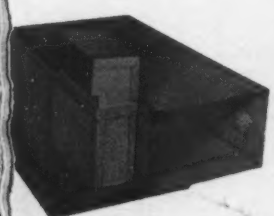
.R.A. SHEETS

-R-A Sheets are a universal product. They designed and constructed to lend themes to easy fabrication into any of the usual ating and Air Conditioning duct and fitg shapes.

THE PACKAGE
A.R.A. Sheets are shipped in an easy-to-handle carton weighing about 100 lbs. There are 20 Sheets 33" wide x 48" or 40 Sheets 16½" wide x 48" packed to a carton.

A-R-A Sheets are a full and unlimited substitute for sheet metal.

Asbestos clad A-R-A sheets are tough yet flexible (Mullen tested over 200 lbs. per in.)—rigid but not brittle—fire-proofed and water-proofed—are light in weight, not dry out, crack, crumble, or chip, have a high insulating value (K, 45 B. T. U.) good sound-deadening properties. They are easy to handle, will bend without aking and can be rolled, punched, scored and die cut, still retaining their rigidity strength.



ITTINGS Intricate and complicated fittings can be easily fabricated in your own shop g a minimum of metal.
lmost the same procedures you would use in fabricating gular shapes out of metal can be used in fabricating e shapes from A-R-A Sheets.
-R-A Sheets can be die cut or notched, creased, scored bent.

ROUND PIPE

You can roll A-R-A Sheets on your own rollers into smooth, strong, round pipe. A standard metal seam can be used for the long joint and a sleeve of A-R-A Sheets or metal can be used for the butt joints.

DUCTS

You can use your regular sheet metal shop equipment. Bend A-R-A Sheets in your brake by severely creasing them with a clamp or a small rod. After a deep or flattened crease is made, they can be folded up to any angle on your brake.

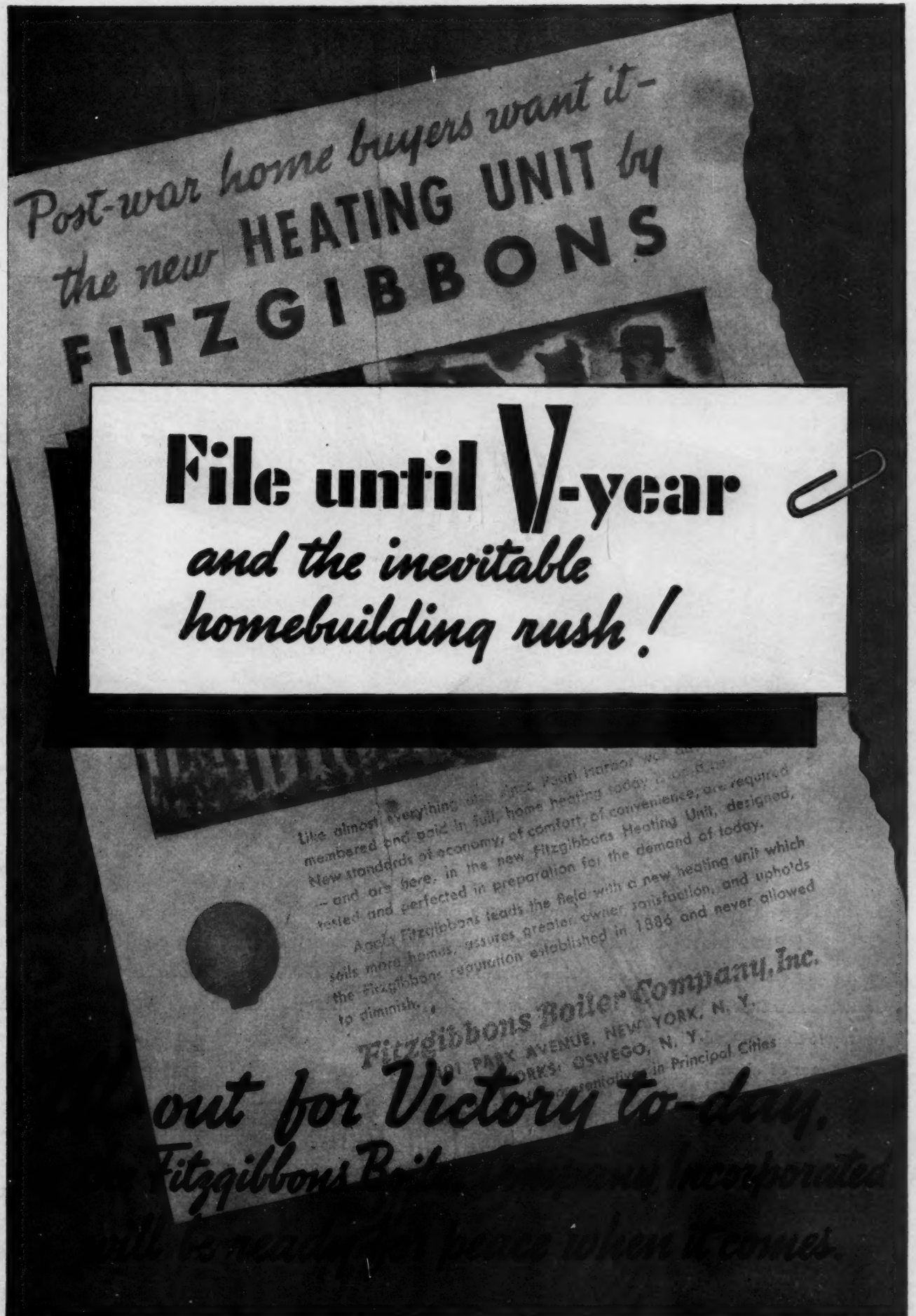
By "setting" your brake to allow for the 3/16" thickness of A.R.A. Sheets, you can fold or bend at right angles to form small one-piece ducts or stacks. A preformed metal seam may be used for the long joint or the butt joints.

Sections of duct work and fittings can be fabricated by overlapped seams or by using plastic seams available on the market.

Write for our free 16 page boo let No. 89 just off the press. Giv full information on A-R-A Shee Gladly sent on request.

Get Genuine A.R.A. sheets from your jobber

4101 WEST GRANT WILSON INC CHICAGO


Post-war home buyers want it-
the new HEATING UNIT by
FITZGIBBONS
File until V-year
and the inevitable
homebuilding rush!
Like almost everything
membered and paid in full, home heating today
New standards of economy, of comfort, of convenience, are required
— and are here, in the new Fitzgibbons Heating Unit, designed,
tested and perfected in preparation for the demand of today.
As only Fitzgibbons leads the field with a new heating unit which
sells more homes, assures greater owner satisfaction, and upholds
the Fitzgibbons reputation established in 1886 and never allowed
to diminish.
Fitzgibbons Boiler Company, Inc.
PARK AVENUE, NEW YORK, N. Y.
ORKS: OSWEGO, N. Y.
Representatives in Principal Cities
out for Victory to-day.
Fitzgibbons Boiler Company Incorporated
will be ready to serve when it comes

OFFICIAL U. S. NAVY PHOTOGRAPH

Just this . . . The same ARMCO Galvanized PAINTGRIP sheets that contractors once used for painted ductwork now starts a warplane on its way to the air—and Victory!

In scores of aircraft plants this original bonderized zinc-coated metal makes the templates — the master patterns from which planes are built. Smooth, flat, and easy to work, ARMCO PAINTGRIP holds fast the paint on which the full-scale design is drawn by hand. Then exact transfers to the aircraft metal are made in a few minutes.

The crucible of modern war is a severe test, even for modern materials. PAINTGRIP, like other special ARMCO metals, is "making the grade" and even improving under the ordeal. We are learning more about producing it better and faster, which will profit you after the war. The American Rolling Mill Co., 11 Curtis St., Middletown, O.

MADE OF ARMCO GALVANIZED PAINTGRIP

THE AMERICAN ROLLING MILL COMPANY

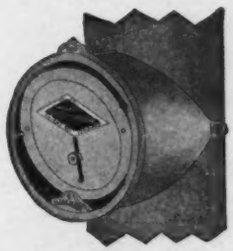
WALKER REGULATORS WORK and SAVE Automatically

FUEL is ammunition . . . you can help save it by installing Walker Automatic Draft Regulators on all heating units from the smallest cook stove to the largest furnace in industrial plants, using coal, oil or gas. Walker Automatic Draft Regulators assure your customers of maximum heating efficiency and savings up to 25% of their fuel bill. These savings not only give you an excellent sales story to secure many repair and improvement jobs, but also tie in with our government conservation program.

Sell Walker Automatic Draft Regulators . . . each installation means a handsome profit for you as well as another satisfied customer on your books. Get complete information on this great line at once—write now for full information and catalogue!

Walker Fuel Saver, Type 34-B and 34-C with Stove Pipe Tee Joint
More than 3,500,000 units of these famous WALKER Regulators have been installed for the fuel users of America. Furnished in sizes 3" to 10" inclusive, in blue, chrome or cadmium, if and when available, and packed in individual cartons or bulk.

Commercial and Industrial Fuel Saver Draft Regulator
Walker makes a full line of industrial controls. Sizes 16" to 36", inclusive, made of heavy cast ring with deep-drawn flanged steel plate with adjustable ball-bearing construction. For use with the heaviest drafts and any kind of fuel.



Walker Fuel Saver Type No. 34, maintains proper draft regulations under all conditions for furnace, boiler, stove or hot water heater. Domestic sizes 4" to 20", inclusive, furnished with or without collar, in either Galvanized metal or Cadmium Plated finish, if and when available.

WORLD'S LARGEST PLANT MANUFACTURING ONLY DRAFT REGULATORS

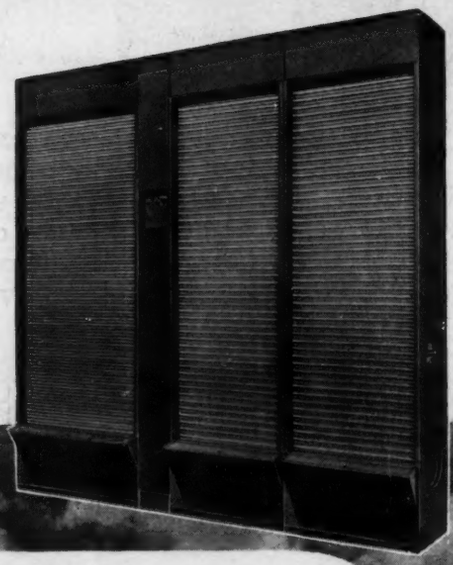
This mammoth plant which is two stories and contains more than 110,000 sq. ft. of floor space is indeed a fitting monument to Walker aggressiveness. With a capacity of over 1,000,000 units yearly, you are assured of not only the finest quality and most efficient draft regulators available, but excellent service as well!

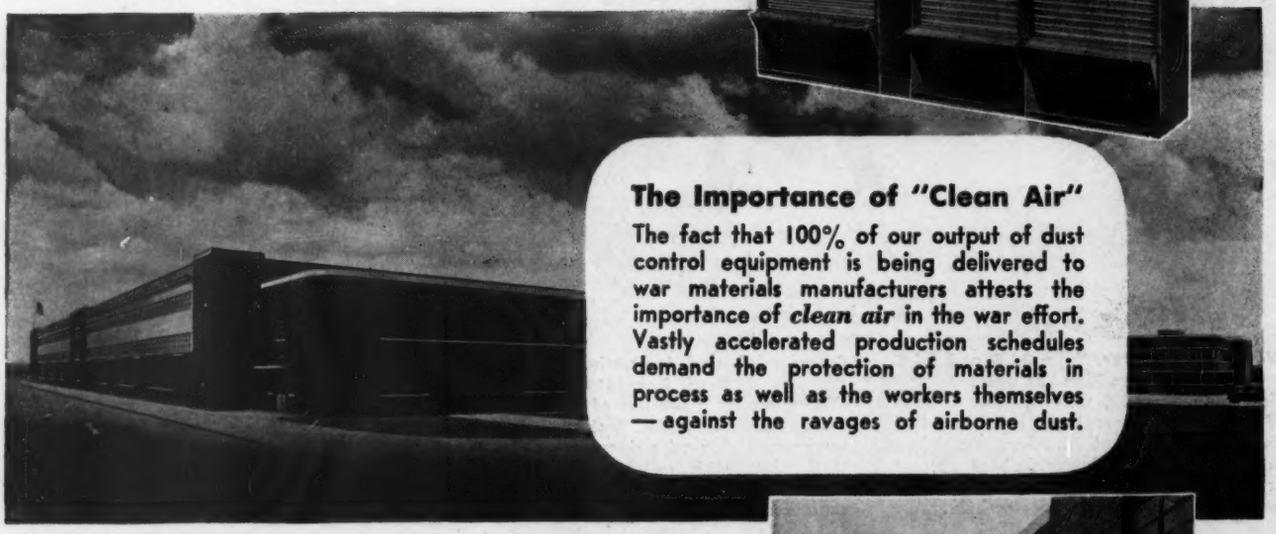
ALL WALKER PRODUCTS ARE LISTED AS STANDARD BY THE UNDERWRITERS' LABORATORIES.

WALKER MANUFACTURING AND SALES CORP.
1714 PENN ST. · ST. JOSEPH, MO.

AAF *Automatics*

Keep the Air clean in this huge Bomber Plant





The Importance of "Clean Air"

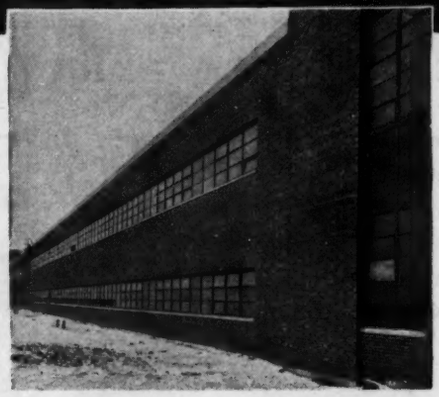
The fact that 100% of our output of dust control equipment is being delivered to war materials manufacturers attests the importance of ***clean air*** in the war effort. Vastly accelerated production schedules demand the protection of materials in process as well as the workers themselves — against the ravages of airborne dust.

MILLIONS of cubic feet of air per minute pass through the big batteries of American Automatic Filters installed in this bomber plant to protect manufacturing operations and personnel from atmospheric dust.

American manufacturers have found AAF Automatic Filters a most economical and satisfactory means of cleaning air. The self-cleaning feature insures a constant, uniform air supply. No time out for cleaning is necessary—they clean themselves as they clean the air.

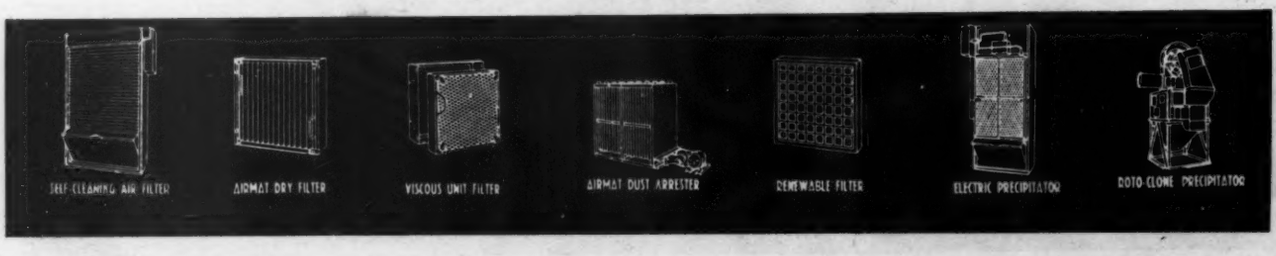
The collected dust is deposited in the Viscosine reservoirs at the bottom of the filters where it may be removed without disrupting continuous operation.

Send for "AAF in Industry" which completely describes the entire line of American Air Filtering and Dust Control equipment.



ALBERT KAHN ASSOCIATED, ARCHITECTS & ENGINEERS, DETROIT.

AMERICAN AIR FILTER COMPANY, INC., 355 CENTRAL AVENUE, LOUISVILLE, KY.
IN CANADA: DARLING BROS., LTD., MONTREAL, P. Q.



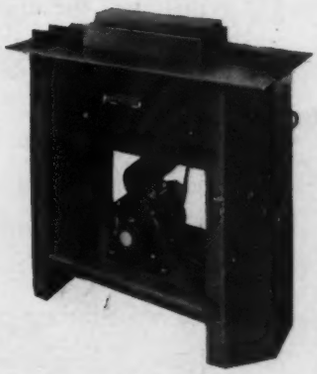
Let's help you SPEED UP THE JOB

. . . WITH LESS MANPOWER!

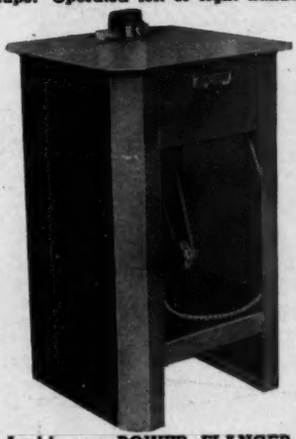
In these war days—when every hour is vital and manpower is at a premium —every machine and device that releases another man for the war effort deserves serious consideration and earnest study.

The Lockformer machines shown here DO speed up the job — amazingly! Every piece of equipment or machine pictured on this page has been developed with that idea uppermost. For example, one man with a Lockformer can make more Pittsburgh locks than 16 men with 8 brakes! Other machines are similarly labor-saving.

Lockformer EASY EDGER
In one operation, turns up right angle, uniform edge on any radius of over 3", and on any curve and irregular shape. Operated left or right handed.



Lockformer 20 22
One man with a Lockformer can make more Pittsburgh locks than 16 men with 8 brakes. Tested and proven in hundreds of shops.



Lockformer POWER FLANGER
Self-gauging. Turns ⅜" right angle flange on 1¾" radius or larger. Anyone can operate. Many times faster than old-fashioned methods.

Combination Pittsburgh Lock Machine and Power Flanger
Makes Pittsburgh locks — and right angle flanges. Really portable. Saves as much as 90% of actual labor costs and time.

Lockformers are "in there pitching" in American shipyards, in Alaska, Dutch Harbor, Great Britain, Pearl Harbor—wherever the job must be done NOW with least manpower. Write or wire for complete information.

THE LOCKFORMER CO.

4615 ARTHINGTON STREET, CHICAGO, ILLINOIS

You Can Help Solve Vitally Necessary Ventilating Problems in War Activities with these New Swartwout Roof Ventilators

Popular, Highly Efficient Designs Now Available in the

NCM

(NON-CRITICAL MATERIALS)

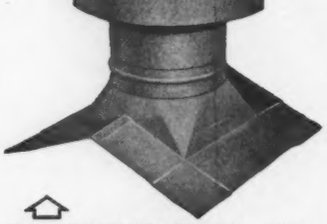
Line of Swartwout Ventilators

NOW you can supply and install much-needed roof ventilation for crowded war factories and army and navy construction, temporary or permanent. Necessary priorities are available for needed maintenance, alterations and arranging for more workers in industrial buildings.

The new Swartwout NCM Ventilators give you tested and approved ventilator designs to handle any roof ventilating problem. Write today for Bulletin 217 and information on how to help supply this needed service.

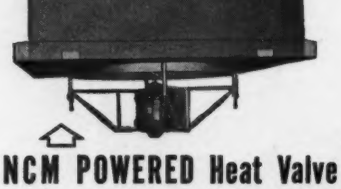
THE SWARTWOUT COMPANY
18615 Euclid Avenue, Cleveland, Ohio

Blackout-Camouflaged
for War Industries • Army and Navy Buildings • All Types of War Building Construction



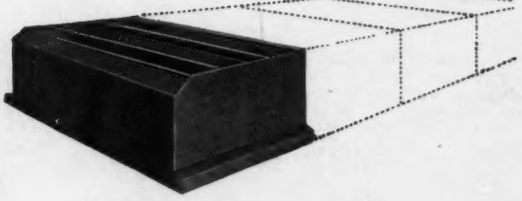
NCM STATIONARY Ventilator

Readily adaptable to almost any type of building. Made of specially developed material—outside sand-treated and painted Army drab. Certified tests show unusually high efficiency under all operating conditions.



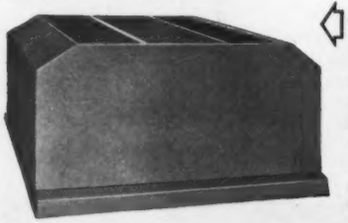
NCM POWERED Heat Valve

This is the UNIT Heat Valve with fan unit installed underneath. Exhaust capacities can be stepped up to many times the gravity capacity of the same size ventilator. Can be used on any type of roof. Finished in Army drab.



NCM CONTINUOUS Heat Valve

Two or more units of Heat Valve are tied together with splice plates to form a continuous ventilator any length desired. Unusually effective for general ventilation. It's "like opening roofs to the sky." Only 32" high. Painted Army drab.



NCM UNIT Heat Valve

Where "quick-action" exhaust is required or where high temperatures, fumes and smoke are present, this ventilator can be placed over parts of buildings most needing ventilation. Made in 8 sizes, none of which are *higher* than 32". Painted Army drab.

NCM

Swartwout VENTILATION SPECIALISTS

"V for Victor Heating Equipment"

. . symbol of more than 50 years of manufacturing excellence, engineering skill and a thorough knowledge of your customers' requirements —and yours. Sell and install Victor Heating Equipment for greatest customer satisfaction and protected profits. Write for complete details today

VICTORY SPECIAL for Forced Air

Illustration shows the No. 120 forced air unit with separate blower cabinet. Model No. 1200 (not illustrated) is the same except that blower is placed underneath the furnace body and enclosed within the 26x26 casing. Capacity (either model), 71,600 B.t.u. per hour at bonnet.

Both forced air and gravity types are built of heavy steel, electric arc welded. Brick lined fire pot. One piece base casing and accurately fitted casings make these furnaces easy to assemble—save time and money on installations. Write today for full information.

VICTORY SPECIAL for Gravity

For gravity heating, two capacities are available. No. 20 delivers 42,024 B.t.u. per hour at the registers or 378 square inches of leader to first floor room. No. 20M39 delivers 53,992 B.t.u. or 486 square inches of leader for one of houses. Both sizes are available in pipe or pipeless type.

Notice that both gravity and forced air types have permanently attached, high shaking lever. This convenience, plus the fact that all models have provision for water coil installation, makes these furnaces popular with us. Write today for full information.

HALL-NEAL FURNACE COMPANY

VICTORY IS OUR BUSINESS IN 1943

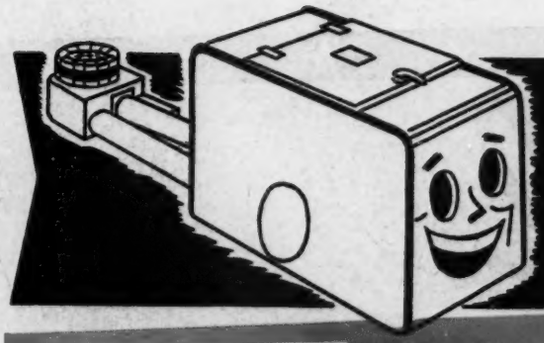
All our skills and facilities are now being devoted to the War that must be fought and won. Stocks of Air Control Registers and Grilles, previously produced, are available at our plant and at all Air Control Jobbers.

OFFICIAL PHOTOGRAPH U. S. ARMY AIR FORCES

also ARMS for AMERICA'S FIGHTING FORCES

Air Control Products, Inc.

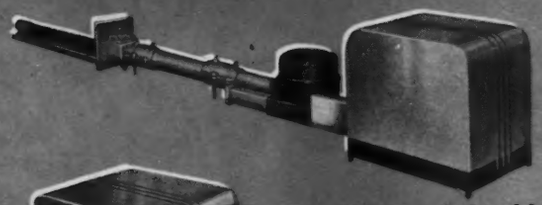
COOPERSVILLE • MICHIGAN



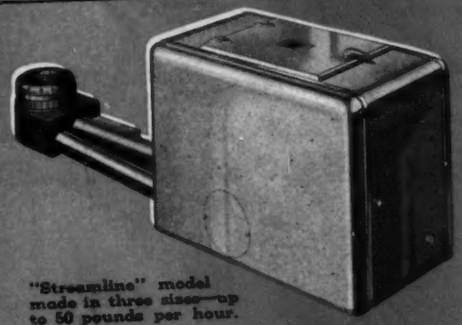
WE'LL ALL BE BACK ...AFTER THE WAR

TO SELL FAST AND STAY SOLD!

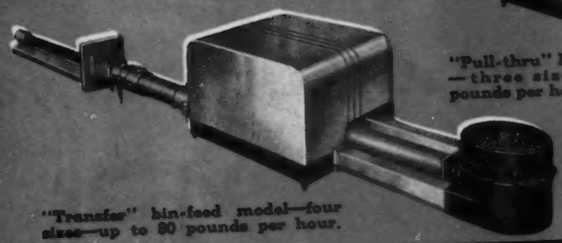
DOMESTIC



"Pull-thru" bin-feed model — three sizes—up to 50 pounds per hour.



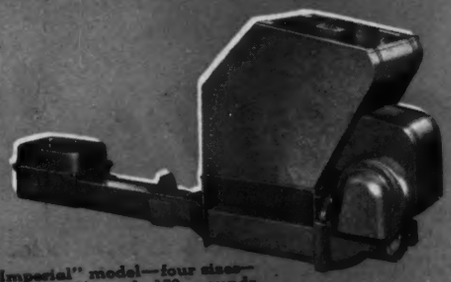
"Streamline" model made in three sizes—up to 50 pounds per hour.



"Transfer" bin-feed model—four sizes—up to 80 pounds per hour.

COMMERCIAL

"G" Series—five models delivering from 125 to 880 pounds per hour.



"Imperial" model—four sizes—80, 90, 110 and 180 pounds per hour.

INDUSTRIAL

Industrial models—six sizes delivering from 166 to 1280 pounds per hour.

ECON-O-COL

ECON-O-COL Automatic COAL BURNER

THE SHIELD OF QUALITY

The "Stronghearted" Stoker

MANUFACTURED BY COTTA TRANSMISSION CORPORATION ★ ROCKFORD, ILLINOIS

fuel conservation

in Heating started years ago..with

DEPENDABLE controls

Those thousands of families all over the Nation, who now use Circulators equipped with A-P DEPENDABLE OIL CONTROLS, know all about Fuel Economy—now so important to conserve America's Oil Supply. They've been enjoying heating comfort at unusually low fuel cost, because of the accuracy, efficiency and dependability of A-P Controls.

But today, this advantage goes farther than the owner's pocketbook. It's a patriotic duty to get every last degree of heat out of available fuel oil. A-P Controls are helping—so effectively that when new Heaters are again available, your customers will learn to look for A-P Control Equipment.

Keep in touch with your Heater Customers! Inspect, repair, adjust their heaters to give them healthful comfort on less fuel—for the duration. You'll perform a double duty, serve your country, and impress your customers with your willingness to help them.

A-P Constant Level Oil Control Valves . . . Chosen for Dependable Fuel Economy On today's leading Oil Burning Appliances.

AUTOMATIC PRODUCTS COMPANY
2452 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN
Export Department 100 Varick Street, New York City

DEPENDABLE Oil Control Valves

A-P Constant Level Oil Control with Fuel Compensator

A-P Thermostatic Heat Regulator Set with Fan Switch

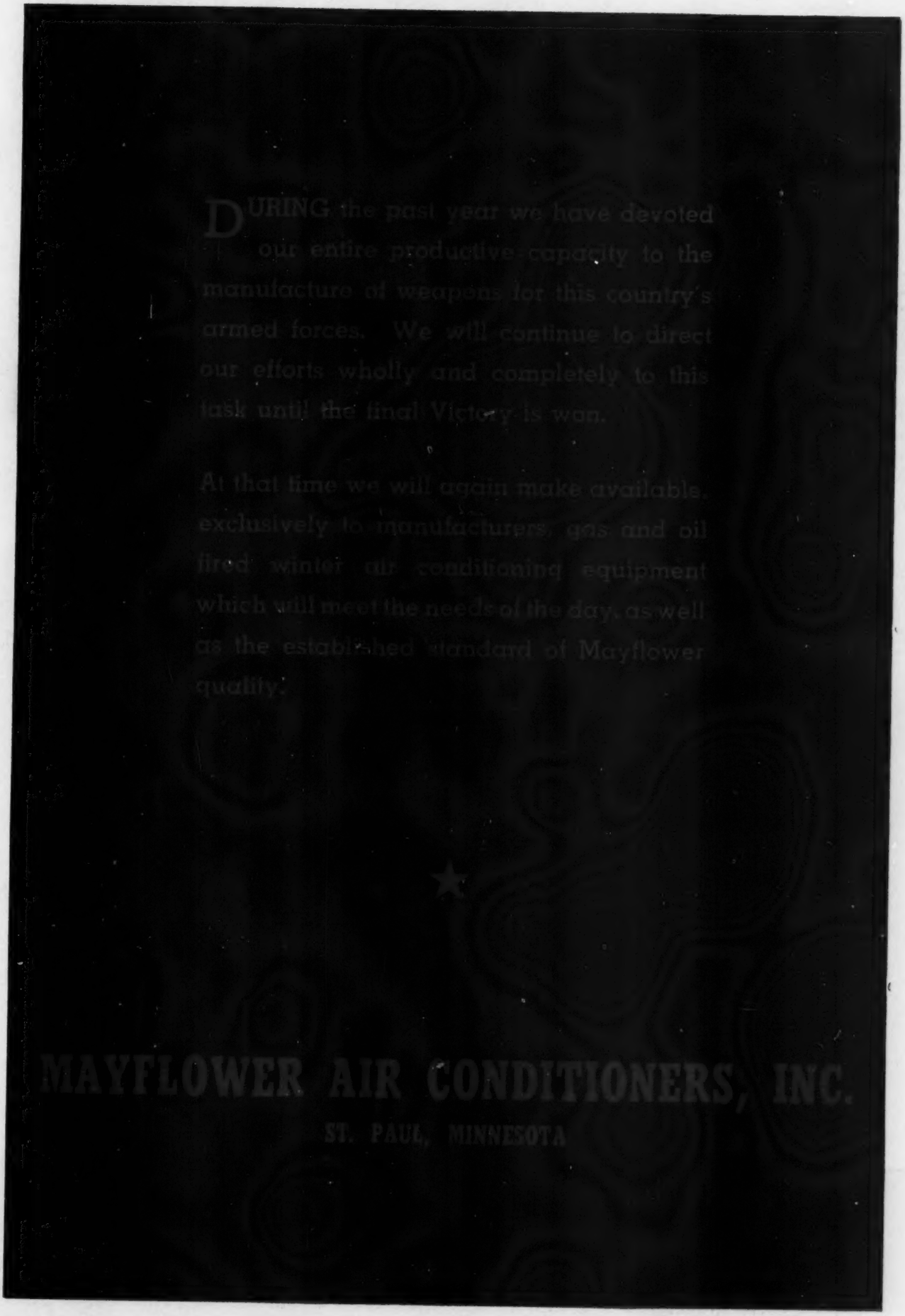
A-P Model 240-Q, Type U Series Temperature Limited Furnace Control

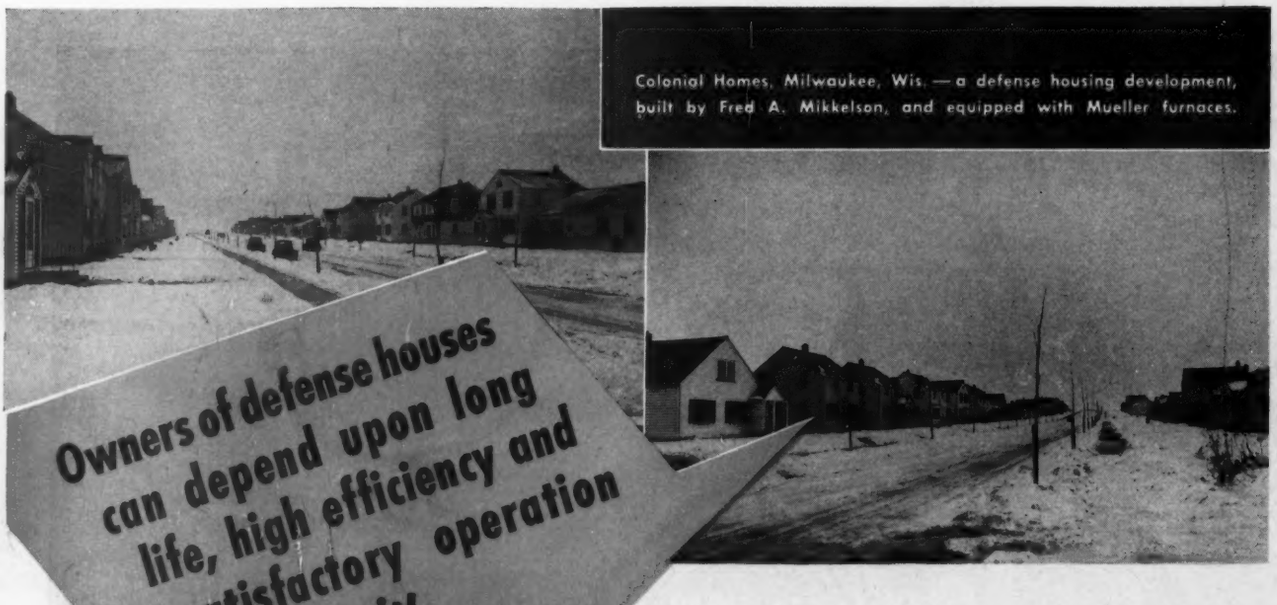
A-P Thermostat with "Heat Anticipator"

A-P Complete Furnace Control Sets for all types of Gravity Oil Burning Furnaces

A-P Oilifter Draws fuel from Remote Storage Tank

A-P Fuel Oil "Trap-It" Traps Water and foreign deposits.


DURING the past year we have devoted our entire productive capacity to the manufacture of weapons for this country's armed forces. We will continue to direct our efforts wholly and completely to this task until the final Victory is won.
At that time we will again make available, exclusively to manufacturers, gas and oil fired winter air conditioning equipment which will meet the needs of the day, as well as the established standard of Mayflower quality.
MAYFLOWER AIR CONDITIONERS, INC.
ST. PAUL, MINNESOTA



Colonial Homes, Milwaukee, Wis. — a defense housing development, built by Fred A. Mikkelson, and equipped with Mueller furnaces.

Owners of defense houses can depend upon long life, high efficiency and satisfactory operation with

MUELLER ALL-CAST-IRON

DEFENSE HOUSING FURNACES (FORCED AIR AND GRAVITY)

You, too, want your defense-housing customers to be satisfied over a period of years — so it will pay you to install these Mueller defense housing units, *designed with standard return-flue radiators* for high output efficiency. These are standard furnaces in every respect and conform to the standards of Mueller equipment produced during the past 85 years. The gravity unit is only 28" square by 46½" high (to bottom of bonnet) . . . both units are compact, neat in appearance, and moderate in cost. Why take a chance with makeshift designs? Stick to Mueller. Ask the nearest Mueller distributor or write . . . *L. J. Mueller Furnace Co., 2010 W. Oklahoma Avenue, Milwaukee, Wisconsin.*

D-28

WR-72 (FORCED AIR) Capacity 72,000 Btu output at bonnet. All cast iron. Equipped with blower. Special plenum 39½" high, with cap, available as extra equipment; extends to ceiling height of 7'4".

View of castings, showing standard return flue radiator. Used in both units.

WG-42 (GRAVITY) Capacity 42,000 Btu output at register. All cast iron. Square casing equipped with bonnet. Rocking and dumping type grates.

MUELLER *Milwaukee*

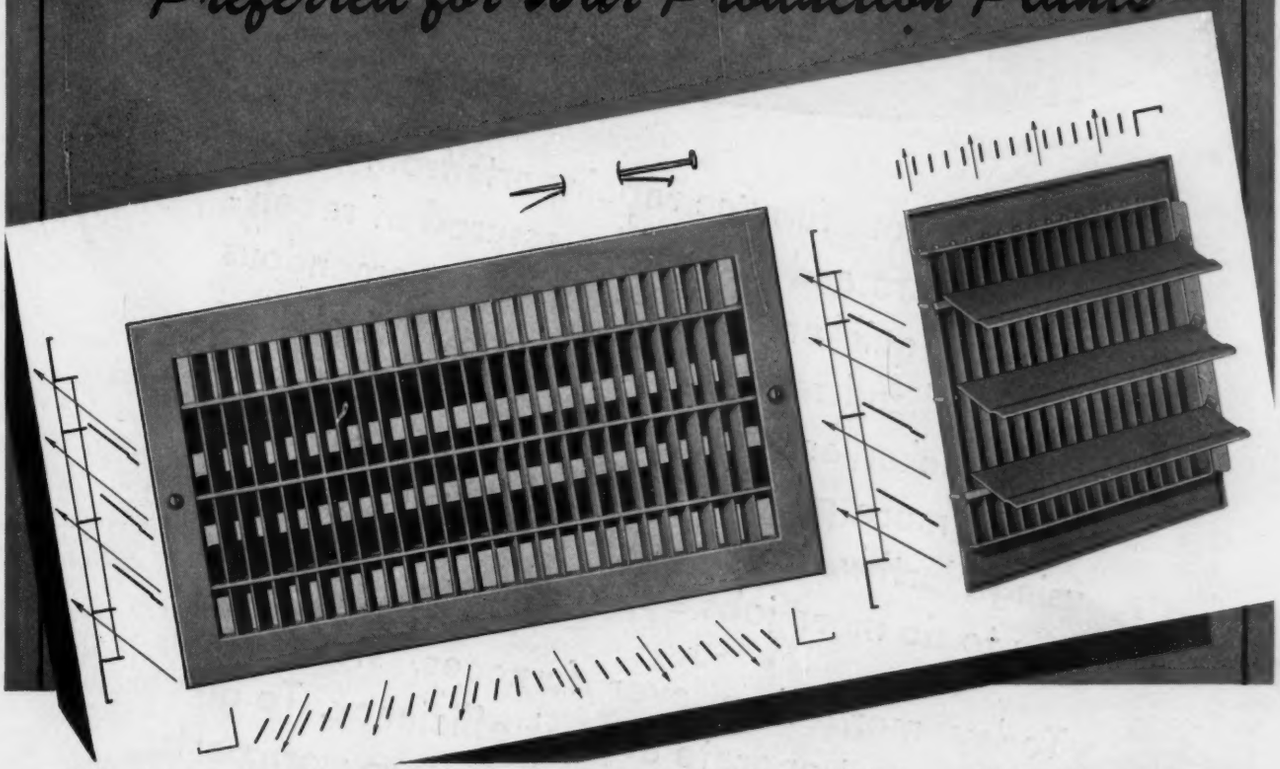
HEATING AND AIR CONDITIONING

INDEPENDENT "Fabrikated" (REG. U.S. PAT. OFF.)

NO. 321-A WALL REGISTER

WITH DEFLECTING VANES

Preferred for War Production Plants



Gives Compound Direction to Air Flow with Certainty

● This highly efficient Independent register has been adopted by many plants producing for Victory because it gives the utmost latitude in directing air flow. Each grille bar can be adjusted individually to direct air flow to the right, left, or fanwise, as shown by diagram. Horizontal deflecting vanes in back may be individually adjusted to give upward or downward direction to air flow. Adjustments can be made either before or after installing. Grille bars and deflecting vanes remain firmly in position without locking and will not vibrate nor rattle.

Every Grille Bar Is Individually Adjusted

Always Leading—Always Progressing

THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET • CLEVELAND, OHIO

Every REPAIR PART Imaginable

ORDER your furnace repair parts from Northwestern and you will be assured of receiving them quicker because of the tremendous stock on hand ready for shipment . . . installing them quicker, as every part fits perfectly . . . and making more profit, because the time saved by using Northwestern Furnace Repair Parts allows you to do more jobs a day!

Today more than ever furnaces, stoves and boilers must operate at peak efficiency. To give your customer this guarantee, replace worn parts with genuine Northwestern Repair Parts . . . and don't forget to give all your salvage scrap to Uncle Sam!

Write Now for Catalogue!

NORTHWESTERN STOVE REPAIR COMPANY

662 WEST ROOSEVELT ROAD CHICAGO, ILL.

chicago

STEEL PRESS BRAKES

SPEEDY, precise, efficient production that will assure more ships, planes, tanks, guns and their accessories is what we all are striving for on today's War Production Front.

Yes, this ever-increasing production means many shops and plants must make equipment additions to keep the ball rolling . . . and that's where CHICAGO Steel Press Brakes do their part to perfection.

Ruggedly constructed to assure long-life and trouble-free service, they do their given tasks, quicker, better and more efficiently. Made in sizes to handle steel sheets from 4 to 20 feet in width, and incorporating many exclusive features in design and operation, they will fit into your shop, solve your particular production problem . . . and reduce operating costs.

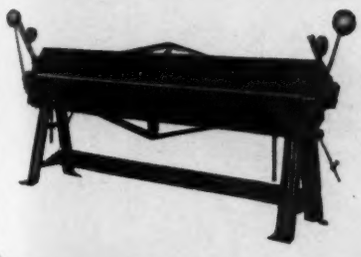
Save Time . . . the most important factor in the war effort with D & K CHICAGO Steel Press Brakes . . . prompt deliveries can be made for all war requirements. Full information and catalogue will be sent upon request.

CHICAGO—Series D Steel Press Brake has exclusive non-deflecting bed, automatic friction brake, and automatic oiling systems. Sizes 4 to 20 ft. capacities up to 5/8" plate.

Standard and Heavy Duty Series . . . handles sheets from 37" to 72", cushioned-type clutch, zerk-alemite lubricating systems, quick adjustment features, variable speed drive, compact, sturdy constructions.

Also Remember

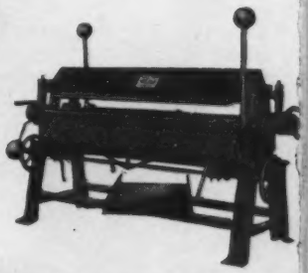
CHICAGO Hand Bending Brakes of all Types



Standard hand brake, one-man operation.

Portable hand brake. Light weight, maximum strength, powerful clamping.

Box and Pan Brake. Adjustable and removable fingers permit any size box or pan to be formed.



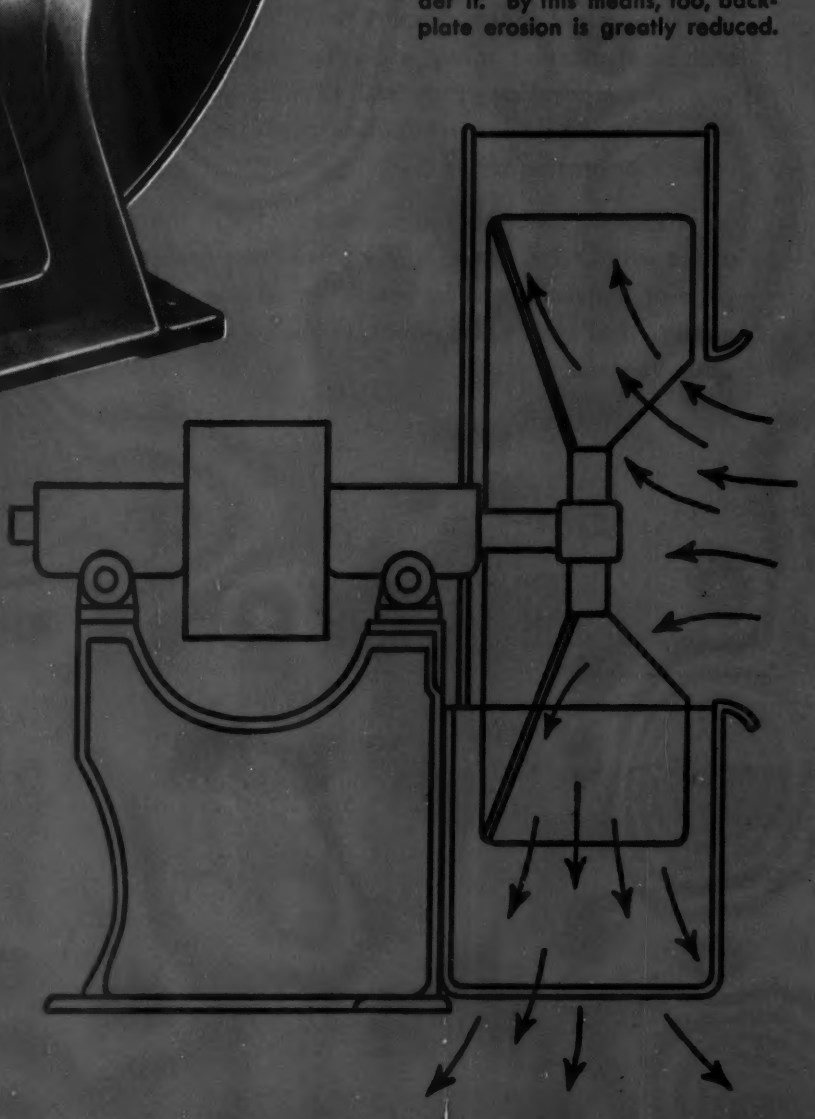
Adjustable Double Brake for forming two bends at one setting.

DREIS & KRUMP MANUFACTURING CO.

MAN OF

UNIQUE STURTEVANT STREAMLINE INLET AND ANGLE FLOW...

Diagram below illustrates the principle employed to reduce turbulence and step up efficiency in the Planovane Exhauster Design 3. Particle-laden air or gas enters from right. Because of the streamlined contour of the special inlet, the stream flow is instantly deflected away from center, hitting the back plate at an angle designed to help fan action rather than hinder it. By this means, too, backplate erosion is greatly reduced.



TYPICAL USERS

Sturtevant Dust Control, Fume Exhaust and Pneumatic Conveying Equipment

eral Electric Co.
ndard Oil Co.
er United Filters
shburn Wire Co.
nir Bearing Co.
tern Electric Co.
icott Johnson Co.
hlehem Steel Co.
. Gypsum Co.
erican Coal Co.
wn Cork & Seal Co.
goleum Nairn Inc.
perell Mfg. Co.
nson & Johnson
d Motor Co.
celite Corporation
ted Aircraft Corp.
nk H. Lee Co.
tt Paper Co.
stone Rubber & atex Products Co.
Plymouth Motor Corp.
Liggett & Meyers Co.
Chase Brass & Copper Co.
Johns Manville Products Corp.
Ingersoll Rand Co.
Aluminum Company of America
John A. Roebling's Sons Co.
Timken Roller Bearing Co.
Monsanto Chemical Co.
Virginia Electric and Power Co.
U. S. Pipe & Foundry Co.
Central Maine Power Co.
Westinghouse Electric Mfg. Co.
Celanese Corp. of America
Yale & Towne Mfg. Co.
Baldwin Locomotive Co.
Keasby & Mattison Co.
S. S. White Dental Mfg. Co.
E. I. Dupont de Nemours Corp.
Revere Copper & Brass Co.
Allis Chalmers Mfg. Co.

ALL WORK

All-Purpose Sturtevant Planovane Exhauster Design 3 meets widely varied needs of many industries

IN THE COLUMN at right are some of the hundreds of industrial exhaust jobs now being successfully handled by rugged Planovane Design 3 Exhausters. The diagram at left shows the main reason why Planovane Exhausters are preferred for industry's "dirty work" – Sturtevant Streamline Inlet and Controlled-Angle Flow. These unique features reduce slip-stream turbulence and cut down back-plate erosion. Result: higher over-all efficiency, lower maintenance costs, less time-out-of-service for repairs and replacements.

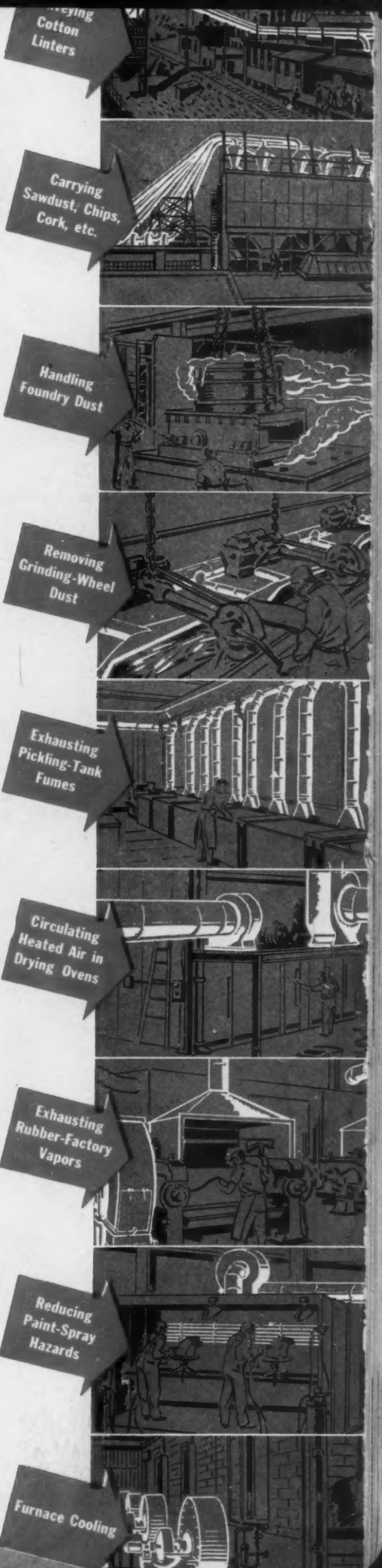
Two other reasons why the Sturtevant Planovane Exhauster Design 3 is a favorite all-purpose unit lie in its simple, sturdy construction and the wide range of sizes available. The *minimum* thickness of scroll, housing-side and blade sheets is 10 gauge! In the intermediate sizes, wheel blades are increased in thickness to 9 gauge, while above size 60 both scroll sheets and wheel blades are further increased to 7 gauge! Housing sides are increased to 7 gauge in sizes above 70. Eleven sizes, ranging from size 30 with 21-inch diameter wheel size to 100 with 72¼, enable the Planovane Design 3 to handle practically every kind of exhaust job.

Your exhauster needs may not require an all-purpose unit such as the Planovane Design 3. Special conditions in your plant may call for a specific type of exhauster installation for which Design 3 might not be suitable. If so, Sturtevant can still help you, for all of the experience and knowledge gained by Sturtevant in founding and building the air-handling industry are here to help you solve your exhaust problems. For further information, write for Catalog No. AA-410-4.

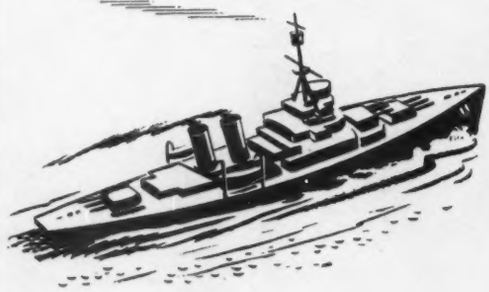
B. F. STURTEVANT CO., Hyde Park, BOSTON, MASS. • *Branch Offices in 40 Cities*
B. F. Sturtevant Company of Canada, Limited—Galt, Toronto, Montreal

Sturtevant
REG. U. S. PAT. OFF.

Puts Air to Work



Winning the battle of Production



WHAT seems like a short year ago, the almost unbelievable task of welding the entire nation's manufacturing facilities into one large production unit was begun . . . today that job has been practically accomplished. There has been an uninterrupted effort from all angles . . . we have met an almost fantastic production schedule . . . we have done a job that has astounded the entire world.

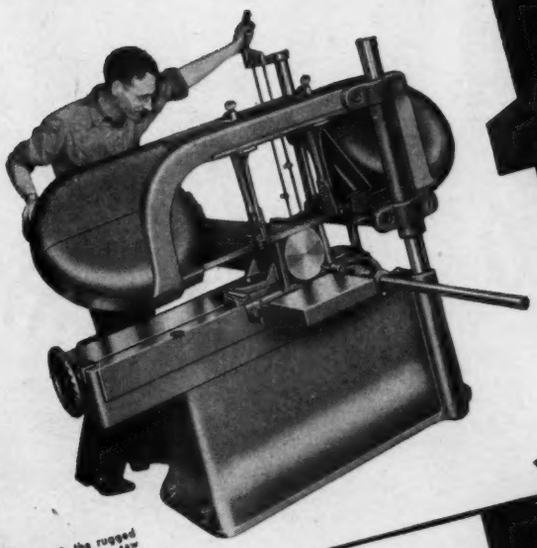
Yes, to do this we have had to make many major adjustments, in our home life, our business, in fact in all the ways and modes of living. Our large furnace manufacturing plant, equipped with the newest, most modern machinery and equipment for the manufacture of Luxaire heating and air conditioning equipment, is today converted to produce the implements of war which contribute to the task of winning the battle of production.

BUY MORE WAR BONDS AND STAMPS

Luxaire

WARM AIR FURNACES
AIR CONDITIONING UNITS
COAL . . GAS . . OIL

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO



Wells V-12, the rugged new heavy duty saw which features hydraulically controlled feed and lift.

V-12

Model 80 is the newly redesigned version of the popular Wells No. 8 saw.

SERIES 80

SPECIFICATIONS

SPECIFICATIONS	V-12	No. 80
Capacity: Rectangular	13"x16"	8"x16"
(Special bowed guides)		5"x24"
Rounds	13" dia.	8" dia.
Speeds: Feet per minute	33, 94, 148	60, 90, 130
Motor Size	¾ H.P.	½ H.P.
Swivel Vise	to 45°	to 45°
Blade Size	13' 7¾"x.032"	11' 6"x.031"
Height to top of table	24"	25½"
Width of Bed	19"	10¼"
Drive	"V" Belt	"V" Belt
Floor Space	73"x30"	8'x6'

Continuous Metal Cutting BAND SAWS for PRODUCTION · TOOL ROOM MAINTENANCE · GENERAL UTILITY

WITH Wells Metal Cutting Band Saws you can apply the advantages of continuous cutting action to virtually all kinds of metal cutting jobs. Almost all metals in all shapes are cut quickly and accurately at minimum expense. Designed to provide maximum efficiency for saws of this type, Wells Metal Cutting Band Saws offer you these advantages:

Capacity is the greatest of any saw for the money.

Simplicity is engineered into the machine to give a lifetime of service.

Three speeds of the CORRECT amount of feet per minute assure most efficient cutting and long blade life.

Controlled feed is positive and accurate.

Heavy I-beam holds and brings fully adjustable guides close up to the work for accurate cutting.

No coolant required even when cutting tool steels.

Heavy, sturdy construction—no vibration.

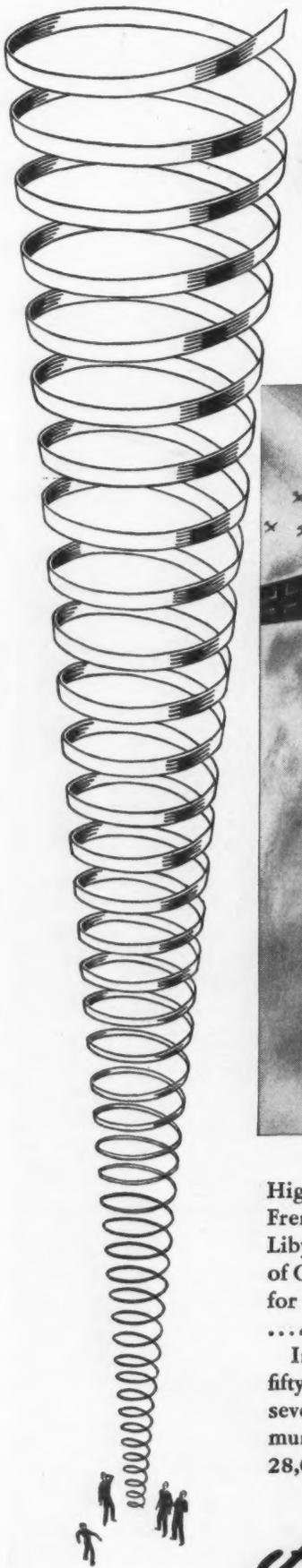
And a host of other details that mean better metal cutting at lower cost.

Wells after Established Leadership

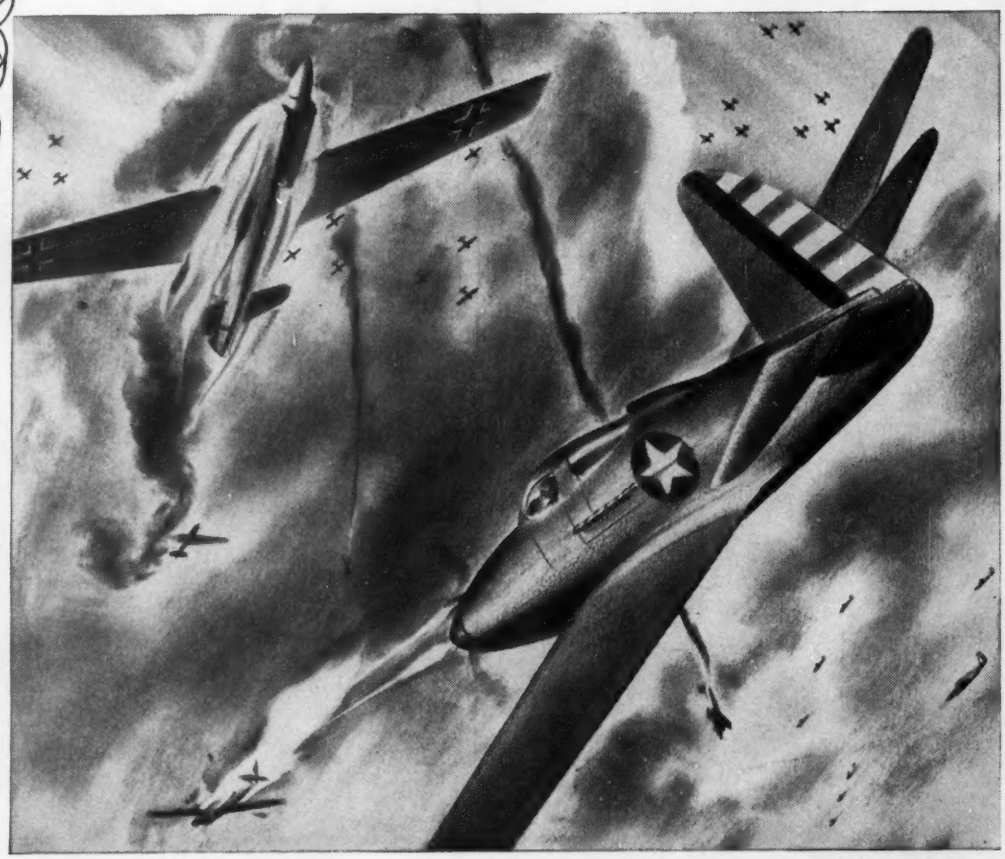
WELLS MANUFACTURING CORP., THREE RIVERS, MICH.

Write for complete details

METAL CUTTING BAND SAWS



RA-TI-TA-TAT GOES 28,000 FEET OF COPPER STRIP



High over Port Moresby and the battered French coast... over the glaring sands of Libya and the bloodsodden rice paddies of China, brave young aviators are fighting for victory with high performance planes ... *and copper!*

In every minute of furious air combat, fifty fighting planes shoot up more than seven tons of copper in the form of ammunition. This is enough copper to make 28,000 feet of 6″ wide 16 oz. copper strip.

This prodigious use of the precious red metal has naturally placed heavy demands on our production, but in the good old American way these demands have been met and in many cases exceeded.

In fact, so well have The American Brass Company workers fought for victory, that five plants have been honored with the cherished Army-Navy "E" pennants for outstanding production of war materials. 4340

Anaconda Copper & Brass

ANACONDA

THE AMERICAN BRASS COMPANY—General Offices: Waterbury, Connecticut

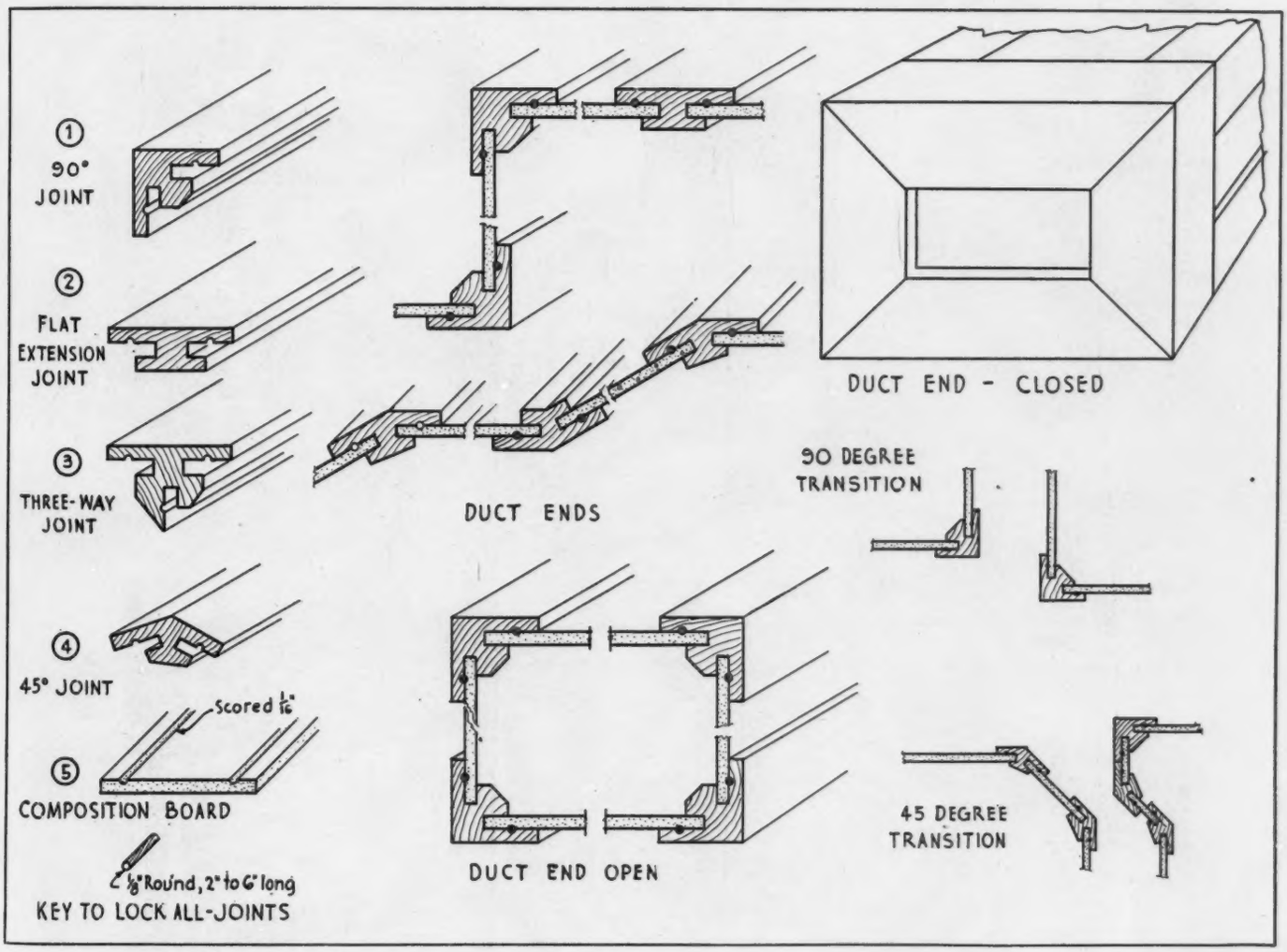
Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

KLOMPARENS

PATENT APPLIED FOR

Lock Joint FOR DUCTS



For use with asbestos portland cement sheets or other suitable sheets for air tight heating or cooling ducts.

Eliminates use of critical materials and *greatly reduces* your erection costs.

Made of wood chemically treated. Will not support combustion and is rot and vermin proof.

Approved by U. S. Bureau of Standards, Federal Housing Authority and other government agencies.

KLOMPARENS LOCK JOINT COMPANY

[redacted] Arlington, Va.

MANUAL and POWER DRIVEN EQUIPMENT
for Sheet-Metal Fabrication

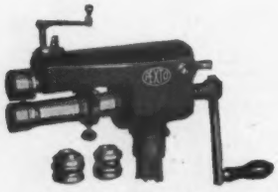
BUILT BY THE PIONEERS IN MODERN SHEET-METAL SHOP PRACTICE

Behind PEXTO Machines and Tools for Sheet-Metal Working lies a background of 158 years of practical experience . . . the experience of a Company that pioneered modern sheet-metal shop practice in this country, and has constantly kept pace with design and construction improvements in this field.

ROTARY MACHINES

SETTING DOWN MACHINES

SLIP ROLL FORMERS



BEADING MACHINES

SCROLL SHEARS

GROOVING MACHINES

CRIMPERS

ELECTRIC ROTARY MACHINES

SQUARING SHEARS

FOLDERS AND BRAKES

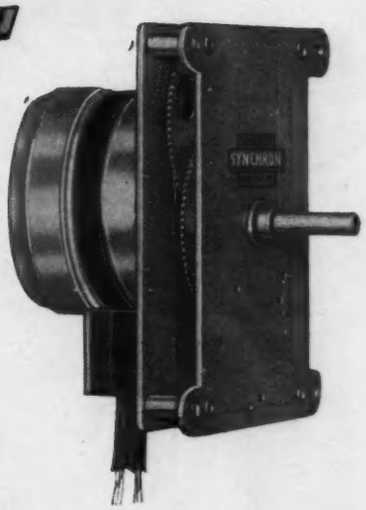
SINCE PEXTO **1785**

THE PECK, STOW & WILCOX COMPANY, SOUTHINGTON, CONNECTICUT, U. S. A.

DEPENDABLE TIMING MACHINES FOR CONTROLS

with

SYNCHRON "600"



- CUTS SERVICE COST
- REDUCES OPERATING FAILURES
- EASY TO INSTALL

These accurately constructed timing machines will give you long operating life in stoker controls. They are built to withstand the punishment of constant operation. There is a Synchron "600" Timing Machine to operate at all standard and many special intervals . . . powerful enough to operate all types of stoker controls yet compact enough to fit in the palm of your hand. Synchron "600" Timing Machines will give you the dependable performance that builds complete customer satisfaction.

Powered by the Famous

SYNCHRON "600" SELF-STARTING TIMING MOTOR

—the motor that gives you these precision features:

- ★ Steel Drill-rod Rotor Shafts, hardened and polished to assure long-lasting, frictionless operation.
- ★ Steel Pinions and Brass Gears, with perfect matching teeth that eliminate vibration and assure instant delivery of maximum power and speed.
- ★ Double Bearings and Life-Time Lubrication.
- ★ Standard Speeds: 1 RPM—1RPH —1 RPD—1 RP Week—clockwise or counter-clockwise.

Small But Powerful . . . Pulls up to 8 oz. direct load continuously at 1 RPM.

Send for your Engineer's Manual Today!

Gives you complete information on the Synchron "600" Timing Machines and other Synchron Timing Devices. For your FREE copy of this manual use your company letterhead—a copy is waiting for you—write for it today!

HANSEN MANUFACTURING CO., INC.
PRINCETON INDIANA

ALLEN Here's Your Directory of Quality Sodering Supplies

SILOY ... The New Wonder Soder That Needs No Priority

WIRE

or BAR form

You can end your soder worries right now with Allen's Siloy Soder, the new low tin-content wonder soder. It works like magic with most common metals . . . in many cases even better than high tin-content soders. Recent prolonged tests prove an amazingly high strength on joints sodered with Siloy. That's a fact worth remembering. Samples of this outstanding "No Priority" product are yours for the asking.

SILVER SODER

WIRE AND RIBBON FORM

(Item 1)

Wire Form

Wire form for all around work. Excellent tensile strength, high vibration and corrosion resistance. Gives rigid, good color joint.

Ribbon form same specifications as wire. (For band saw work.)

FLUX FOR SILVER SODER

(Item 2)

Provides quick, smooth flow giving deep sound silver soder penetration on most metals including stainless steel.

ALLEN "ALL-SOL"

STAINLESS STEEL SODERING FLUX

(Item 3)

Here's a remarkable, fast flux that makes the sodering of stainless steel as easy as sodering tin plate. (Also available in a special odorless formula where less strength is required). "ALL-SOL" works with all soders but for best results use Special Soders.

ALLEN SODERING OIL

(Item 4)

A highly technical, concentrated sodering compound officially endorsed by the National Underwriters.

Causes neither verdigris nor corrosion. Gets into the tiniest crevice and takes the soder along with it. Makes perfect electrical and mechanical joints. For hand or machine sodering. Excellent for sweat sodering copper pipe joints.

ALLEN SODERING STICKS

(Item 5)

"Official Approval Listing"—Underwriters ALLEN STANDARD FORMULA

An economical, rapid flux. Just a touch to the hot metal does the work. Fuses the soder rapidly without fuss, muss, or after-corrosion. **"SAMSON" Formula—Second to none save the ALLEN.**

ALLEN Neutral Rosin Fluid Flux

(Item 6)

This is a flux of absolute safety for electric motors, telephone, radio, commutators, instrument work, fine wires, etc. This flux is so safe you can spill the flux on the work allowing it to remain forever with no corrosion hazard to the finest wire or metals. Allen Neutral Rosin Fluid Flux is absolutely neutral and moisture free and absolutely non-conductive to electrical current.

ALLEN SODERING LIQUID

(Item 7)

Standard Formula. For all-a-round work, for all metals save aluminum and stainless steel.

17,000 pounds to the square inch with no gumming, fumes, or corrosion. Double strength, non-evaporating, Works like lightning. Adaptable to hand, or machine sodering. Excellent for tinning the sodering copper.

ALLEN EZY-FLO Torch Formula Sodering Paste

(Item 8)

A special sodering paste for torch and "sweat joint" sodering. Also, works well with the sodering iron. Comes in same sizes and at same prices as "Standard Formula."

ALLEN SODERING PASTE

(Item 9)

Standard Formula, Safest sodering paste made — fast working—a convenient corrosion-free, soft form of flux. Adheres to the surface while you soder. Assures secure electrical and mechanical joints. Saves time. Triples strength of the soder. Makes soder self-fluxing. Official National Underwriters Laboratory approved listing.

ALLEN SODERING SALTS

(Item 10)

An all around flux in convenient powder form; just add water 3 to 5 times according to metal to be sodered. Soders all metals but aluminum. Takes a quick bite and makes the soder hold on. Non acid. Comes packed in metal or glass as preferred.

At Your Service!

ALLEN Technical Research Division

For many years we have maintained a fully staffed and equipped Technical Research Division for the testing, development and perfection of Allen products and to help solve our customers' technical problems. We have been proud to serve many of America's foremost concerns.

If you have a sodering, tinning or related problem, we will be glad to cooperate to the fullest extent. There is no charge for this service.

Can We Help You?

GET THE FACTS MAIL THIS NOW!

L. B. ALLEN CO., INC.
6702 Bryn Mawr Avenue
Chicago, Illinois

Without obligation, please send us further information on the items checked here: Nos. 1-2-3-4-5-6-7-8-9-10.

Also send samples of SILOY—The New Wonder Soder: ☐

Put us on the complimentary mailing list of "Quips and Tips", the little Allen Monthly House Organ: ☐

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ALLEN L. B. ALLEN CO. INC. SODERING SUPPLIES

all since 07

6702 Bryn Mawr Ave.
CHICAGO, ILLINOIS

An Open Letter to the

★ WARM AIR HEATING DEALERS OF AMERICA:

A great and grave resonsibility has been placed in your hands as a result of this War. The families of our fighting men must be kept warm and comfortable during the next heating season . . . their morale must be kept at the highest possible peak, so that their efforts will keep our boys going on their respective fronts. THIS IS YOUR JOB.

To successfully accomplish this necessary service to our government and your customers you should abide by the following rules:

1. Inform all home owners that NOW is the time to check their furnaces. Do not wait. Materials for repairs are available, and in case of Wise furnaces get the original repairs from the original manufacturers.

2. REPAIR every furnace possible. Use new parts ONLY where absolutely necessary. Make a scrap heap of old and unused metals and return them to the government.

3. Conserve all iron and steel. Do not install a new furnace unless the old one is positively beyond repair.

4. If beyond repair, new furnaces are available under Preference Rating Order P-84.

By following these rules and keeping the furnaces of American Homes in top-notch condition, you will be helping our government tremendously.

So again we suggest, check with your customers on their furnaces NOW! The Wise Furnace Company can supply promptly the ORIGINAL PARTS made to fit Wise Furnaces . . . they are the ones to use . . . they may be purchased direct from the manufacturer.

YOURS FOR VICTORY,

★ The WISE FURNACE Co.

AKRON, OHIO

Call Clarage!

for EXPERT HELP on any WAR-TIME AIR HANDLING PROBLEM

To give ***immediate assistance*** to our Government — and to industry engaged in vital war-time production — Clarage maintains application-engineering offices at all the strategic points indicated on the map above.

Each Clarage branch office in ***manned by experts*** — by capable engineers long experienced in successfully meeting air-handling requirements of every conceivable kind.

On hundreds of America's fighting and cargo ships, in army tanks, and in war plants from coast to coast — wherever DEPENDABLE ventilation, cooling, mechanical draft, etc., are essential — ***there fans, blowers and allied equipment built by Clarage play their part.***

We're on our toes to help you! We're trying hard to maintain a prompt, intelligent, satisfactory war-time service — all the way from initial recommendation to delivery.

It will pay you to dial our number in your city, or phone or write the factory at Kalamazoo.

Note from the page at the right the various products we build.

COMPLETE AIR CONDITIONING
•
COOLING
•
VENTILATION
•
FACTORY HEATING
•
MECHANICAL DRAFT
•
FANS and BLOWERS for INDUSTRIAL NEEDS

Here are Some of the More Widely Used
CLARAGE PRODUCTS

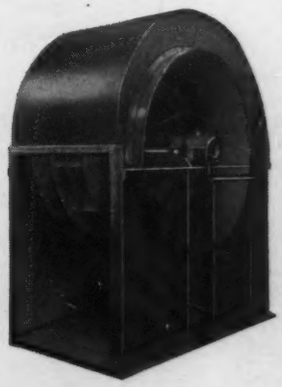
VENTILATING FANS

Applications — Used in ventilating, cooling, heating or complete air conditioning of industrial plants, war service buildings, army barracks, etc. Built in two types as shown at right, and in 28 sizes with capacity range from 200 to 100,000 c.f.m.

Clarage dust-proof, oil-tight bearings standard equipment on both types of fans; ball bearings furnished if desired. In smaller sizes, both types reversible for any of 8 directions of air discharge.

Type HV are SLOW SPEED fans, designed particularly for belt drive — practically silent in operation. Type W are HIGH SPEED fans, designed for either direct motor or short center V-belt drive.

TYPE HV



TYPE W

UNITHERM

CLARCO

UNIT HEATERS

Applications — Used for heating industrial plants, warehouses, war service buildings, etc., utilizing either steam or hot water. Wide range of sizes in both types shown at left.

Unitherm Units are LARGE AREA heaters. Aside from floor type heaters, they are also built for ceiling or wall suspended operation. Easily and quickly installed.

Clarco Units are SMALL AREA heaters, and for helping out where more heat is needed. Designed for ceiling or side wall installation only. Quiet in operation.

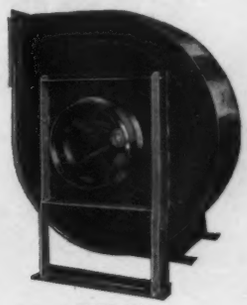
EXHAUST FANS

Applications — Used in all kinds of exhaust and pneumatic conveying work, with dust collecting systems, removing fumes, etc. Clarage dust-proof, oil-tight bearings standard equipment; ball bearings furnished if desired. Wide range of sizes.

Standard Exhausters (see both types at right) operate at speeds suitable for either belt or direct motor drive. Type LH Exhausters operate at particularly slow speeds, and are extra efficient.

In the smaller sizes, both types are reversible for any of 8 directions of air discharge.

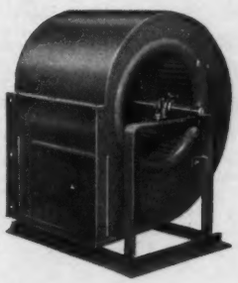
STANDARD



TYPE LH

FURNACE FANS

These small centrifugal fans are widely used in connection with warm air heating installations in army barracks, homes for defense workers, etc. They operate at low speeds — extremely quiet in operation. Built in 10 sizes with capacities from 200 to 5,000 c.f.m.



Units can be furnished as complete fans with or without inlet boxes. Or we can furnish wheels only, housings and wheels only, or any other combination of parts required. With a high percentage of furnace manufacturers, Clarage Fans are standard equipment.

WRITE FOR BULLETINS

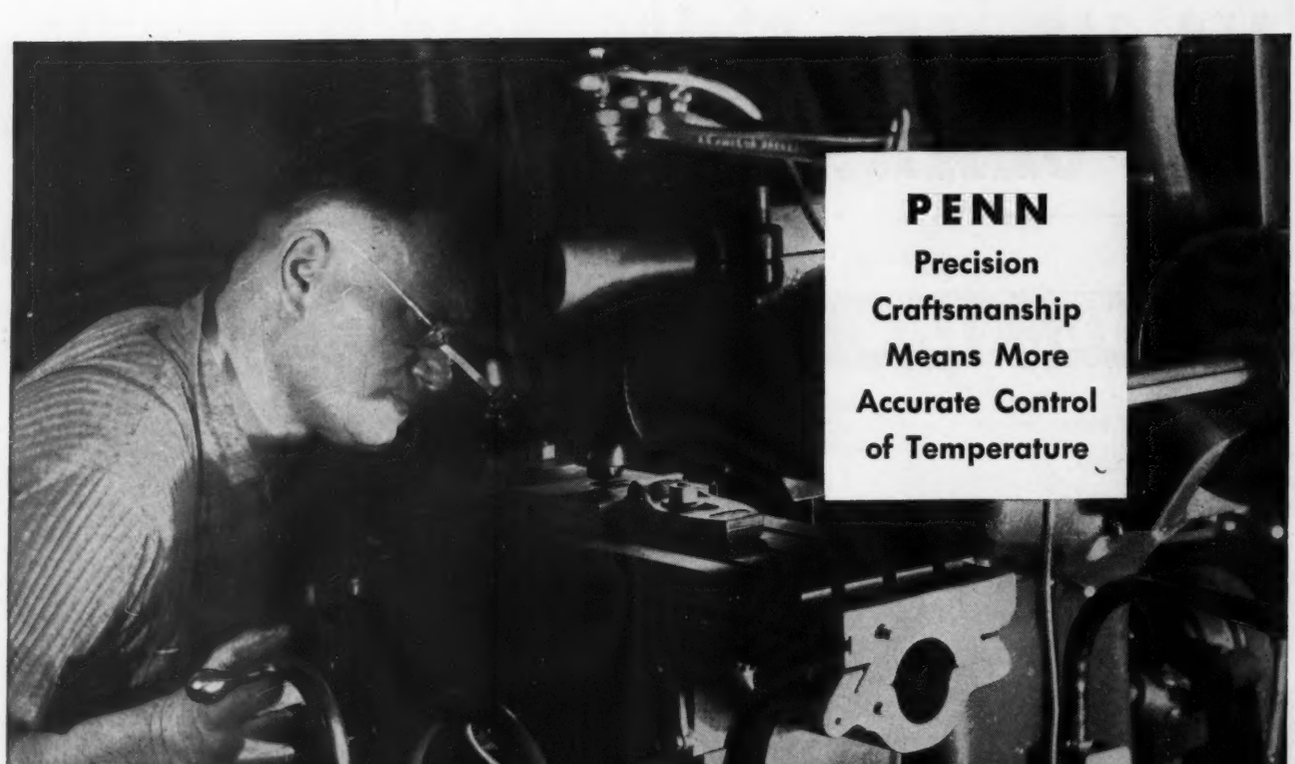
Descriptive and engineering data available on all units shown — and on the many other Clarage products.

UNICOIL HEATERS

These assemblies form integral parts of central station systems for heating, cooling or complete air conditioning. Large range of sizes.

Standard unit consists of finned coils, eliminator plates, galvanized settling tank with drain, and galvanized casing. Air filters and spray nozzles furnished to meet special conditions if desired.

The assembly combines in a single structure all elements necessary for efficient heat transfer, eliminating the need for assembling many different parts on the job, thereby saving time and money.



NOW...MORE VALUABLE THAN EVER

PENN HEAT ANTICIPATING CONTROL

With the present urgent necessity for fuel conservation, owners of heating plants controlled by Penn Temtrol—the famous heat anticipating thermostat—are especially fortunate.

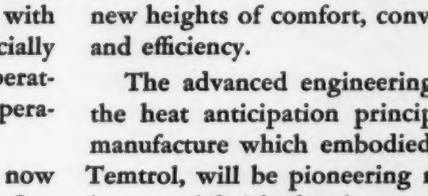
Fuel-saving is one of two outstanding features of the Penn thermostat—the other is the healthful comfort of uniform temperature, with no wide swings or over-runs. This is especially important now that your customers are operating their heating systems on a lower temperature level that usual.

Naturally Penn controls are available now only under the established priority rules. Our engineering skill and production facilities are being devoted without stint to the making of precision instruments of vital importance to our fighting forces—on land, at sea and in the air.

When the war is won you can look to Penn with confidence for the automatic controls which will carry our American standard of living to new heights of comfort, convenience, economy and efficiency.

The advanced engineering which perfected the heat anticipation principle, the precision manufacture which embodied this principle in Temtrol, will be pioneering new achievements in control for the heating systems of the future.
Penn Electric Switch Co., Goshen, Indiana.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Vol. 112 American Artisan No. 1

The "Buy-in-Advance" Plan

THE Office of Price Administration announced in December that it will submit for public consideration shortly a plan whereby today's prosperous consumers can pay now, or begin to pay now, for automobiles, furnaces, houses to be delivered after the war ends.

This announced plan gives government sanction to the proposal of Henry J. Kaiser for a pay-now-deliver-later program which will provide industries and firms with something to sell now even though the commodity sold (like an air-conditioning furnace) is banned because of material shortages.

Under the proposal, the houseowner needing a new furnace and wanting an oil, or a gas or any other fuel, forced warm air furnace but able, now, to do nothing more than repair and maintain his equipment, can enter into a contract to purchase the furnace he wants by paying cash, or beginning an installment contract, to pay for just the type of furnace he has in mind.

But instead of actually getting his air-conditioning furnace for his cash or on delivery at the end of the time payment contract, the houseowner will receive a "certificate" which indicates that a certain sum of money has been put on deposit with the Treasury of the United States. At the end of the war, the Treasury will then pay to the furnace manufacturer whose equipment the houseowner selects this money on deposit and the furnace manufacturer will deliver to the houseowner (presumably through the manufacturer's dealer) the furnace selected.

The furnace dealer, as compensation for his selling effort, will get a 6 per cent commission, payable immediately, and when delivery is made the dealer will then proceed to install the furnace with the usual profit on the labor, sheets, etc.

Probably new legislation will be needed. Whether the Treasury will give a wholly new type of security as the "certificate," or will give some current bond, remains to be determined. Some advance publicity states that the "certifi-

(*Continued on page* 155)

American Artisan's Priority Digest

THE rules and regulations under which this industry has been operating during 1942 and under which, probably, we will operate for months to come, without much question constitute the greatest single headache facing the industry.

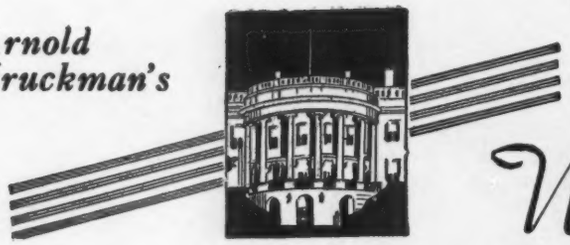
During 1942 new regulations, changes, amendments, interpretations came marching out of Washington in a never-ending stream. If a man devoted all his reading and studying time completely to "priorities," he would hardly have been able to keep abreast of all the changes during the year.

During 1942 orders overlapped other orders. Specific operations became subject to control by two or several completely different orders. A job we ordinarily would take in our stride became all tangled up in regulations under several orders and, perhaps, several government agencies.

In this issue we have attempted to dissect from the legal verbiage of some forty orders which directly affect our industry, the important points which tell us what we can do, how we can do it, what we can use, and through what prescribed forms and agencies we must function.

We do not—we cannot—guarantee that every word in this "Digest of Priorities" is gospel true. We have tried to obtain approval from as many sources as possible. We have given the "purpose and intent" in some cases where actual wording still has not been officially interpreted. The Digest will, we hope, be useful in taking a quick glance at a given priorities problem and will point the way to final, official ruling where the regulation, itself, is cloudy.

Arnold Kruckman's



Washington Letter

New Fangled Heating Equipment

FRIENDS of the warm air method of heating in the Government are very reluctant to discuss the new-fangled heating equipment that is designed to meet the metal shortage in connection with War housing. Apparently the general attitude is something like that of the family which has a problem child. Many of your Government friends say nice things of these new units in that unenthusiastic way which is really an unspoken apology. Others apologize frankly and still others, off the record, will tell you these ideas will work only in a limited way in a limited number of areas. For example, the furnace or the heater in the chimney has not sold itself to these Government experts with one exception. Apparently these officials are keeping their hands off and take an attitude that will enable them to say they were not for it if it fails altogether, but will also enable them to say they did not stand in its way, if it is successful.

Meanwhile, the tip-off is that the impending furnace order (concentration order) will not only allocate enough metal to manufacture those 50,000 or 75,000 furnaces needed for general civilian replacement, but will provide enough metal to permit other manufacturers to make equipment that may be used in War housing not included in the furnace-in-chimney program. It is suggested you may gather the potential possibilities for production by studying the War Housing Instruction Manual issued jointly by FHA-WPB on November 11, 1942. You will find there a hint that other heating equipment may be produced besides the trick combinations recently evolved by private units and Government personnel. And apparently the corollary idea is that WPB under the CMP program will furnish the metal to make the various kinds of heaters for the 400,000 or more War shelters that must be built in 1943.

"Concentration" Still Being Argued

It was generally assumed the furnace Order would finally be published by January 1. This is written the last days of December, and at the moment it appears the discussion is just as muddled as it has been since the original formula was decided. No one is prepared to say what the final allocation of metal will be. At the moment the estimate ranges all the way from 50,000 to 100,000 standard furnaces, plus materials for War housing.

The chief stumbling block now seems to be that Ferdinand Eberstadt, who has the final materials say, insists he must know "why." In the grand and glorious days of the past year the theorists could get away with "guesstimates" if they could talk well. Figures and facts and realism often had little to do with the contents of an Order. A forceful personality, plus fast talking, and the Old School Tie, usually got further than cold facts. Eberstadt, however, insists upon specific answers to questions and he forces the "experts" to demonstrate realistically. Naturally this has brought a new type of expert to the front; and one reason—mark *one* reason—the furnace Order has been so slow in unfolding is because the new and more practical expert is now engaged in orienting himself in this more downright atmosphere.

The same general philosophy attaches to the concentration aspect. Joseph L. Weiner, the arch-priest of concentration, now head of the Office of Civilian Supply, was born in Russia, educated at Columbia University, and has chiefly lived his mature life either among the councillors of downtown New York, or as a member of the legal staff of the city government of New York. He honestly believes in concentration as an end in itself to achieve social objectives. The general theory is that his ideas have impressed his fellow graduate of Columbia, who also was prominent in certain legal circles of New York, and who is Donald Nelson's alter ego, and stands exceedingly high at the White House—Sidney L. Weinberg.

Concentration Must Justify Itself

Thus, naturally, we find concentration insistently to the fore in the Nelsonian public papers. But with greater realism from quarters like those influenced by Eberstadt and others, there is much stubborn opposition to concentration, unless concentration can be justified by answers to specific questions of economy. This school in WPB simply says that concentration is all right if you can achieve a very definite and realistic purpose, but that it is far better to let nature take its course. They mean that if the shortage of materials, and labor, and transportation, and other facilities eliminate certain units of an industry, such natural elimination will occur inevitably and will cure any condition of economic superfluity that may exist. There are signs that the philosophy of this school may have a definite effect on the destiny of the furnace industry concentration Order. It may even altogether prevent concentration, but do not rely upon that eventuation too much. The social betterment boys are still very strong at the White House and elsewhere around Washington.

In connection with these Orders there is a strong intimation from some quarters that you may not be compelled to make either Utility or Victory models.

As you know the Utility model is a stripped version of the manufacturer's usual product, while the Victory model is a stripped furnace patterned by Government and is identical no matter who makes it.

In step with the recent realism in War government, the idea seems to be to place certain over-all specifications in the Order. These specifications will obviously impose automatic limitations. These limitations, together with the limitations on the metal available, are expected to be sufficient to control the manufacturer. The common sense idea now prevalent here is that within these limitations the manufacturer should be free to make a furnace as he pleases. In this way you leave enterprise free to produce something that still may compete with some other product on the basis of the ingenuity and taste and originality of each producer.

New Congress Is 40% "Small Business"

From this trend in thinking here you should be able to deduce that there is strong current towards leaving business free of such control. By no means is it safe for you to assume that this goal has been achieved. There is more than hope that the utter regimentation may be avoided. But to avoid it, you must be vocal about your wishes. This present softening of the collectivist philosophy which has been so dominant here, is due to the way in which you and your friends let them know what you think at the November polls. Many of the new members of Congress actually come from the ranks of "Smaller Business." It is estimated over 40% of the newly elected Members either were Smaller Business Men or were elected by the Middle-class, smaller business vote. This Congress is expected to do the same thing to the Bureaucrats that Eberstadt and his followers are doing to the social betterment experts. They are constantly going to ask WHY, and insist on rational answers. If you constantly keep asking Congress WHY, Congress will call you blessed.

FPHA Has Dropped Furnace-in-Chimney

Federal Public Housing Authority, which has built, is building, or will build, 497,283 War housing units, —present figures—*has dropped the furnace-in-chimeny type heating equipment.* It will not use the equipment in the 184,689 units now in process of building, and in the 147,932 units still unbuilt, but which will be built this year. The official reason for eliminating this type of furnace is that the facilities for production are so limited only a very few could be manufactured. The implication is that there are no facilities which could be adapted to the job. We hear, however, that the real reason is that the WPB and FPHA architects and supervisors in the West staged an open revolt and absolutely refused to install the equipment because it was found wanting.

It is extremely difficult to pin down any key official here to an exact statement in regard to the location of installations, or the exact number of furnaces-chimneys that were installed. Apparently most of them were installed in and about Detroit, Chicago, and other Great Lakes areas, as well as in New England, New York state, on the Pacific slope, and a scattering in Minnesota, Wisconsin, Kansas, Oklahoma, Virginia, and other Southern and Southwestern States. The original intention was to install 35,000. One important source in this Government says that between 10,000 and 15,000 furnace-in-chimney heaters were installed. This probably embraces FPHA, FHA, and installations by Army and Navy. Somewhere between 1,000 and 1,500 are being installed at this writing. But the real facts probably are that Government in its own projects actually installed not more than 5,000. FPHA itself belittles its installations in such manner as to make you think the number is so small that it is negligible. The most reliable and impartial source reports that it is absolutely certain FPHA installed 1,500. Installations began over a year ago.

Trick Furnaces Not Universally Satisfactory

The word is that the equipment was reasonably satisfactory in climates like Florida, Louisiana, California, and wherever there seldom is severe cold. But the complaints came from New England, New York state, from Michigan, Ohio, and similar localities where winter is real. The few outright champions here for the equipment declare that the failure in the cold zone is probably due to the fact that the houses were not properly insulated. FPHA people candidly tell you they never assumed the equipment would give 100% satisfaction. It was simply the best way out of a situation which otherwise seemed insoluble. They are rather inclined to feel that War workers who complained were unpatriotic. They think they ought to be willing to suffer some slight discomfort in the cause.

In the broadest sense the impression here is that pressure from WPB Office of Civilian Supply, under the Henderson regime, persuaded the various agencies to make the installations. The OCS people undoubtedly were sold on the idea of heating equipment which would use approximately only between 250 and 350 pounds of metal. Up to this time no one seems to have actual, specific, static figures about the metal used. Apparently there was some experimentation with each group of installations.

FHA Furnace-in-Chimney's Only Sponsor

The only place where you find definite sponsorship for the equipment here is in the Bureau of Standards and in Federal Housing Administration. The Bureau of Standards gave the equipment a rating of 86% efficiency, producing 60,000 btu., with a 6-inch flue. FHA obviously is in the same position as other Government agencies in its troubled efforts to secure equipment for the 100,000 privately-financed War dwellings for which it is responsible. It is estimated FHA may have prompted installation of 10,000 furnaces-in-chimneys. They are very vague about figures. They say they will probably install 60,000 to 70,000 more.

But these suggestions were made before the FPHA came out with its definite retreat from the field of furnaces-in-chimneys. Both FHA and FPHA are parts of the same agency, the National Housing Agency. Ordinarily the policy of one constituent part in a private corporation would apply to others. But in Government the principle usually does not hold. It is quite possible, therefore, that FHA may continue to use the equipment. Much depends upon Bob Thulman who sincerely regards the furnace-in-a-chimney as an answer to the growing lack of metal. Thulman and his associates at the Bureau of Standards seem to be

(*Continued on page* 130)

American Artisan's Priority Digest

On the following nine pages, plus four pages in the Air Conditioning Section, plus three pages in the Sheet Metal Section we present a digest of the 36 principal orders which currently control this industry's business procedure. These digests are not intended to be "orders-in-full," but a quick summary from which the applicability and the general terms can be obtained. There are, in addition, numerous other orders which govern our procedure with firms in special industries for whom we do contract work.

The Basic Priorities System

THE Priorities System, briefly defined, is a method of controlling the distribution and use of scarce materials. By the use of individual certificates and preference rating orders (P orders), allocation orders (M orders), limitation orders (L orders), etc., WPB directs materials and finished goods into selected channels.

The basic system rests upon sixteen priority regulations known as Priority Regulation No. 1, 2, etc., to P. R. No. 16. Priority Regulation No. 1, as amended, is the basic document and will be explained later.

Priority Regulation No. 1

Priority Regulation No. 1 is the basic document establishing the priorities system and affects every man in the industry whether he be manufacturer, fabricator, jobber, dealer or contractor. PR No. 1 also controls every type of material, equipment, part, assembly—whether or not a shortage thereof exists. Government agencies are also covered by PR No. 1.

PR No. 1 establishes the sequence of ratings as they now exist and sets up the rules for determining when an order must be accepted. PR No. 1 also controls the order in which deliveries must be accepted; also establishes the "practicable minimum inventory," and outlines the records which must be kept.

Sequence of Ratings

As of December, 1942, the preference order sequence is: AAA; AA-1, AA-2, AA-2x, AA-3, AA-4, AA-5; A-1-a, A-1-b, A-1-c, etc., to A-1-k; A-2, A-3, A-4, etc., to A-10; B-1, B-2, etc.

As of today, AAA is reserved for cases of exceptional emergency and is assigned by the Director General for Operations, WPB, Washington.

Note that there is no AA; this was eliminated by order of June 26, 1942, and all then existing AA's were rerated AA-2. By amendment of August 10, 1942, AA-1 and AA-2 are treated as alike.

Acceptance and Delivery

Rated orders for any products, whether or not accompanied by a priority certificate, must be accepted and fulfilled in preference to any ordinary purchase order even though these rated orders concern production facilities only and not materials. Highest rated orders should take preference over lower rated orders, but you have the privilege of rejecting a higher rated order if you obtain permission to do so from the Director General for Operations.

You may apply for rejection if—

1—Delivery is impossible without delaying previously accepted orders of the same rating or higher rating.

2—Acceptance can be made only by using materials already completed or scheduled to be completed within 15 days, provided these materials have been produced for a previously accepted order rated A-2 or higher. An AAA order may not be rejected even though materials must be taken from orders in the AA-1, etc., series.

3—Your buyer is unwilling to pay regularly established prices.

4—The material or product sought is not your regular production.

5—Acceptance will interrupt a schedule under way and resulting in loss of production.

In classifying orders by priority rating the government indicates to you that in cases where you cannot meet delivery on some of your contracts you should delay delivery on lowest rated orders and deliver highest rated orders in their order of rating. When two orders bear the same rating, delivery should be made on the order first received. If both orders were placed at the same time, deliver the earliest delivery date order first.

Any order bearing a rating higher than A-2 may not be delayed for a higher rated order unless specifically ordered by Director General. It is not required to interrupt a production schedule which is established on a monthly or longer period of time until the end of the current time period, but not for more than 40 days.

Inventory Control

Priority Regulation No. 1 limits every business to a minimum practicable working inventory and this minimum is your maximum. You may have less, but not more material. This rule applies to raw materials, products, parts, etc., and applies to both manufacturers and jobbers. Inventory should not be figured on an over-all basis, but on each item separately. A practicable inventory is defined as just enough to keep

going. At first, a 30-day period was used to define an inventory, but because many industries like the furnace industry is seasonal, WPB now permits such industries to buy for busy seasons in advance but not in greater quantities or at different dates than normally used.

PR No. 1 does not apply to inventories already in stock, but only to additions which will place inventory above the maximum allowed. Inventories below permissible maximum may be replenished only up to permissible maximum.

If a producer has enough material on hand to fill a rated order he should extend his rating to his supplier, but should begin production immediately while materials are coming in. Priorities Regulation No. 3, amended, permits a producer to accumulate rated orders until he has enough orders on hand to buy his usual discounted quantities or material, but may not wait more than three months.

PR No. 1 requires every person—manufacturer, jobber, contractor, sub-contractor—to keep for a period of two years a detailed record of every rated order transaction. No prescribed form is specified, but records must show—parties involved; dates of contracts or orders; preference rating for each order; actual delivery dates; description of all materials used, quantities, kinds, etc.

As to reports, PR No. 8 eliminated most of the monthly reports formerly required under the "P" orders. Where a report is asked, either the government will specify a report on a "PD" form or ask for specific information in letter form.

Priority Regulation No. 3 (Simplified Certification)

PRIORITIES Regulation No. 3 originally prescribed the methods for extending and applying ratings on individual certificates (PD-1A, PD-3A, etc.) but an amendment effective July 1, 1942, included methods for applying and extending ratings on blanket "P" orders also. The amendment of October 3, 1942, simplified the procedure for extending ratings for companies not under Production Requirements Plan.

Sometimes confused, PR No. 3 distinguishes between "application of" and "extension" of a rating. The person to whom the rating is initially assigned "applies" the rating. All others, such as his supplier or sub-contractors, "extend" the rating.

The only digression is in case of a PD-3A which is a governmental agency preference rating certificate. On PD-3A's, then, the certificate is both an "assignment" and an "extension" and anyone who receives a PD-3A may extend the rating to obtain operating supplies.

Certification

Any person authorized to apply or extend a rating may now do so under Priority Regulation No. 7 by endorsing on, or attaching to, each contract or purchase order placed by him to which the rating is to be applied of extended, a certificate in the following form, manually signed by an official authorized to sign.

> "The undersigned purchaser hereby represents to the seller and to the War Production Board that he is entitled to apply and extend the preference ratings indicated opposite the items shown on this purchase order and that such application or extension is in accordance with Priorities Regulation No. 3 as amended, with the terms of which the undersigned is familiar."

.....

Name of Purchaser or PRP Certificate No. Address
By

.....

Signature and Title of Authorized Officer. Date

Production Requirements Plan units must show their PRP certificate number.

A purchase order placed by telegraph may use only the substance of the wording. Such abbreviation is valid if the outgoing telegram is signed by the authorized officer.

In an effort toward simplification, it is not necessary now to serve on any supplier a copy of any authorization for applying or extending a rating. Also, no acceptances of any blanket orders need be filed. However, copies of purchase orders must still be sent to procurement officers where PD-3A extensions are involved.

The person applying a rating may obtain only the specific amount of material specified on the application except in some blanket orders (particularly P-100) where no amount of material is designated. In such cases, the producer is permitted to obtain the minimum required amount or the minimum commercial amount whichever is the greater.

Generally speaking, ratings will be extended to obtain materials which:

1—Will be incorporated in a product or contract for which you received the rating extended,
2—Will replace in your inventory material you used from your stock to fill a rated order,
3—Will be used as repair, maintenance and operating supplies.

You may only extend a rating to obtain material for your inventory if your inventory is below the "practicable working level" or to replace material used to fill an order from stock.

The question of materials for repair, maintenance and operating supplies has been a bothersome one. By ruling, such supplies can only be "supplies which are actually required for directly processing production material." This means small hand tools, or machinery parts, and does not mean new machines, additions to buildings, etc.

Furthermore, the cost of such operating supplies may not be more than 10 per cent of the cost of the production materials to which the same rating is applied in any given month. Thus $5,000 worth of furnaces permits only $500 worth of small hand tools, foundry repair parts, etc.

Also, if the operating supplies consist of metals in any of the forms listed in the Metals List attached to

PR No. 11 (AA, July, 1942, page 26) the cost of such supplies to which a rating is extended cannot exceed 2½ percent of the cost of the production materials to which the same rating is applied during one month. Production materials obtained without priorities can carry for operating supplies only the same 2½ percent of the cost of materials bought in one month.

You may not add the 10 percent and the 2½ percent—the 2½ percent must be included under the 10 percent.

The Production Requirements Plan (PRP)

SO FAR as the average warm air heating-sheet metal contractor is concerned, the Production Requirements Plan does not affect his operations. First of all, the Production Requirements Plan (hereafter called PRP) applies to a firm which uses, in any calendar quarter, an aggregate of $5,000 or more in value of metal in the forms included in the Metals List. All firms using less than $5,000 worth of critical materials are exempt from the operations of PRP and continue to operate under the Priorities system.

To explain, most manufacturers of furnaces operate under PRP; so do large sheet metal fabricators doing war work or war product sub-contracting. Heating contractors, even though they may be doing work requiring $5,000 worth of metal per quarter, are generally not included under the plan, since the plan intends to include only such firms as are in continuous production on one certain type of product or contract.

If you qualify to operate under PRP, all of the necessary forms which you must fill in, records you must keep, and methods of operation you must follow need be explained in detail and understood thoroughly, and such explanation is far beyond the space limitations of this summary. If you are not a proper applicant for operation under PRP, then the plan, in general, does not interest you.

An announcement from WPB, dated December 31, 1942, states that manufacturers operating under the Production Requirements Plan will shortly receive copies of a new form PD-25-F. This form is to be used to apply for supplementary authorization under PRP and is simplified to make it easier for PRP units to submit information necessary to obtain proper consideration of the applications. In addition to providing means for applying for supplementary authorization, the new form makes such a supplementary material requisition a bill of requirements for supplementary material exclusively and not, as heretofore, a recapitulation of revised total requirements. When an application covers more than one class of products, the new requirements, under the new form, must be broken down into the amounts for each class into which the materials will be incorporated.

The Controlled Materials Plan (CMP)

AS ANNOUNCED and explained in the November and December, 1942, issues of AMERICAN ARTISAN, effective November 7, 1942, a new plan was placed in operation, called the Controlled Materials Plan (CMP) to go into effect on April 1, 1943, and to be in full operation by July 1, 1943. While the intent of this new plan is the same as the various priority and other orders preceding, the basis of operation is completely different.

The general purpose, briefly stated, is to balance the requests for critical materials against possible supply. This balance will be handled by seven claimant agencies (see December, AMERICAN ARTISAN) with each claimant agency setting forth the absolute minimum amount of critical material required to pursue the war. The sum-total of materials requested by all claimant agencies will then be balanced against the possible supply and if there is more demand than supply, then each agency will be asked to reduce its requirements.

So far as the warm air heating and sheet metal industry is concerned, our claimant agency will be the Office of Civilian Supply. OCS will be the mouthpiece for all essential civilian industries using critical materials and not producing equipment or products directly used in the war. Thus all requirements for warm air furnaces for 1943 must be determined by OCS and added to the requirements for lawn mowers, bobby pins, etc.

As explained under the Production Requirements Plan, every prime or sub-contractor using $5,000 worth of metals during the quarter makes his own application to WPB for his own requirements and receives his individual authorization, in the form of Priority ratings.

Under the CMP, the prime contractor in most cases will submit to the claimant agency the requirements for the critical materials he requires as well as the materials required by all of his sub-contractors. A warm air heating or sheet metal contractor engaged in new house projects may, under this order, be considered a prime contractor or prime consumer. However, it is also possible that on some contracts (say for ventilating) the sheet metal contractor will be a sub-contractor and will submit his material requirements through the prime contractor for the particular job on which he is working.

At the beginning of 1943 there are two classes of CMP manufacturers (Class A and Class B). Class B products are those enumerated on a Class B list which is subdivided into two parts, Group 1 and Group 2. Class A products are, generally speaking, those direct war products like ships, tanks, guns, etc. At the beginning of 1943, the furnace industry is a Class B manufacturer, in Group 2. And it is still questioned whether or not furnace manufacturers will operate under CMP or continue under PRP.

WPB has issued bulletins describing CMP in detail, and for those interested we suggest a copy be obtained and studied carefully.

The Individual Certificate (PD's)

AN INDIVIDUAL Certificate (PD-1a, PD-3a, etc.) is a document assigning a preference rating to deliveries of materials entering into the performance of a particular contract. The contractor, after receiving an Individual Certificate, may extend the rating to the various suppliers furnishing material and equipment for his contract. A separate extension must be made for each particular sub-contract or purchase order. The supplier on receiving the extension of a rating on a particular purchase order may, in turn, extend the rating for materials entering into the performance of the particular purchasing order.

The Individual Certificate must be distinguished from a blanket rating which may cover the delivery of materials entering into the performance of several contracts. It should be noted that in the case of ratings extended to firms operating under the Production Requirements Plan, such PRP units may not extend these individual certificate ratings. PRP units obtain a rating on an individual certificate and apply such ratings only for materials needed for construction and expansion or for major capital equipment.

On January 12, 1942, Priorities Regulation No. 3 was released to simplify the assignment, application and extension of individual certificates. Effective February 2, 1942, a new streamlined procedure was instituted and on June 10, Priorities Regulation No. 3 was further amended to provide the uniform method of extension and application of ratings described previously.

The principal individual certificates concerning the warm air heating and sheet metal industries are PD-1a, PD-3a, PD-1x, and considerable confusion has accompanied these orders as explained in AMERICAN ARTISAN, July, 1942, page 18; April, 1942, page 28; August, 1942, page 26. Following is a summary of these three orders:

PD-1a

PD-1a is a simplified blank which replaces the old PD-1. PD-1a should be used to apply for a rating for a civilian item or for materials on sub-contract work not based on a preference rated prime contract. The form PD-1a may be obtained from any local office of WPB. The application must be made by the *purchaser* of the material. A separate application must be filed for each class of material or capital equipment. Furthermore, a separate application must be made for each plant which is to furnish the material or equipment covered by the appeal. In addition, a separate PD-1a application must be made for each product or for each use for which the material or equipment is required. Therefore, if the material entering into a single product or use is being purchased from several plants, a separate application must be made for the items purchased from each plant. On the other hand, if the material is being purchased from one plant but the purchased items will enter into the production of several products, a separate application must be made for the items entering into each product.

Furthermore, if the items purchased will enter into different uses, separate application must be made for each use. Where it is difficult to determine whether items are to be used for one use or several uses, contractors should use the test whether or not the same statements can be made about the various ultimate purposes of the items covered by the PD-1a appeal.

Form PD-1a must be filled out in triplicate and the certification on the duplicate copy must be filled in by the applicant. An instruction sheet accompanies Form PD-1a, listing eight questions which the applicant should answer.

At the end of 1942 it is taking about two weeks to process a PD-1a application. If you inclose with your application blank a self-addressed postal card, the case number assigned to your application will be stamped on the card and returned to you so that any inquiries which arise before the appeal is granted can be referred to by your case number. WPB suggests, however, that each applicant wait at least two weeks before filing any questions.

A rating is assigned on the form PD-1a by stamping the Preference Rating on the form itself.

It should be remembered that PD-1a must be instigated by the ultimate consumer, but the contractor can assist the consumer in filling out the application. And, lastly, PD-1a cannot be used to increase inventory, but can be used only for materials for a particular project.

PD-1x

PD-1x became effective April 1, 1942, and is intended for use by certain distributors, wholesalers, or jobbers in place of Form PD-1a. The new form, PD-1x, enables these special businesses to obtain priority assistance for the purpose of maintaining sufficient stock on hand to avoid any delay in delivery which might be required where a rating is received and extended on each individual order.

At present jobbers are not permitted to apply for priority assistance on any other form; however, they may still use ratings extended to them by their customers. Therefore, the new form is not expected to cover all of the distributors' requirements for priority assistance. Where the jobber receives an order bearing a good rating for a large quantity of material, it is suggested that the jobber extend the rating covered by that order to his supplier instead of applying on Form PD-1x. It will be seen, therefore, that PD-1x is intended to enable jobbers to maintain inventories of parts, materials and products sold in small quantities.

PD-1x works with Limiting Order L-63, which sets the size of inventories which may be maintained by jobbers. Form PD-1x may not be used to exceed the maximum set by L-63. Since many jobber orders bear a rating higher than the jobber would be assigned on a PD-1x, it is suggested that the high rating of the individual order be extended rather than the application for a new rating on PD-1x.

In general, ratings assigned to the jobber on PD-1x are established on the basis of the importance of the product and use, and jobbers are required to furnish information on their sales and inventory of the type of material for which the priority assistance is requested. The jobber should indicate to whom he sells the product and the end use to which the product will be put, if possible.

The jobber receives a rating on his PD-1x application and these ratings, in turn, are extended on the jobbers' orders to producers by a simple form of en-

dorsement. Ratings authorized for specified quantities of materials may be applied to more than one purchase order placed with different suppliers provided that the total quantity to which the rating is assigned is not greater than the total amount authorized. This certification must be filled in and manually signed in accordance with Priority Regulation No. 7 by an official of the jobbing firm. This certification may be typed, stamped or printed, and reads as follows:

Certification

Preference Rating ..... is hereby applied pursuant to Form PD-1x, Serial No. D ..... in accordance with Priorities Regulation No. 3, with which I certify I have complied.

....
Address (Distributor or Supplier)

....
Date (Signature and Title of Official)

PD-3a

When the contractor obtains a contract from any purchasing agency of the government, the contractor will receive a preference rating certificate on Form PD-3a from the contracting officer or other authorized agent of the government. PD-3a forms are serially numbered starting from M-1 and indicates a preference rating assigned.

Effective September 16, 1942, Directive No. 2 establishes the procedure to be followed by WPB field officers in assigning preference ratings to these government orders. Formerly, authority to issue ratings in the field were delegated to army, navy and other procurement officers, but since September 16 recommendations for ratings must be initiated by the Procurement Officers, after which WPB will check the rating to see that the ratings are in compliance with military priorities directives and other instructions, and will approve the rating or change the suggested rating.

All military construction will be rated by the issuance of an order in the P-19-h series, after application is filed on Form PD-200. The application must be approved in writing by an authorized WPB official. The purpose of this September change is to prevent government officials from applying high ratings, irregardless of the scarcity of the material applied for and without respect to available quantities or delivery dates. It is presumed that WPB will know whether or not materials can be obtained and will grant only a high enough rating to obtain the materials for the required delivery date.

For the purpose of government orders under PD-3a, all contractors are Prime contractors.

If a contractor enters into contract with the government agency and no PD-3a is assigned, the contractor is permitted to request a PD-3a form by means of a letter to the agency. Sub-contractors, in turn, are entitled to the preference rating and should ask the company which placed the order with the sub-contractor to extend its rating to the sub-contractor. If a contractor feels that a rating assigned is too low to obtain the material, he can appeal to the contracting officer for a higher rating by furnishing certain information which the contracting officer will indicate. If a new higher rating is granted, a new PD-3a certificate will be issued to the contractor. Final appeal should be made directly to the Director General for Operations, Washington, D. C., setting forth all claims for the higher requested rating.

Where the construction project is not being built under a prime contract with a supply bureau of the government but is being built to facilitate production under a war supply contract, application for a rating should be made on Form PD-200 or PD-200a. Form PD-200 and PD-200a should be submitted to the Project Rating Branch of WPB. If the application is approved, a blanket order will be issued on form P-19-h to the contractor.

Orders of General Influence

L-41

(Stop-Building Order)

Issued—April 9, 1942
Amended—July 23, 1942, and September 7, 1942
Application Form—PD-200, PD-200a
Application—Made to the local FHA office for the area
Priority Rating—Rating assigned to project

SUMMARY

LIMITATION order L-41 prohibits any person from beginning construction work, ordering, purchasing, accepting delivery of, or withdrawing from his inventory, material to be used to begin construction. Certain types of building construction can be started without obtaining permission. These general types are government war agencies, mining operations, utility structures, residential construction which costs less than $200, multiple-residential or agricultural construction costing less than $1,000, or industrial construction costing less than $5,000.

Therefore, an owner may contract for work on his residence if the total cost is less than $200 or a manufacturer may remodel his building if the total cost is under $5,000, or a farmer may remodel his barn if the cost is under $1,000, without obtaining permission, but if the cost exceeds these amounts, then permission to begin construction must be obtained. Reconstruction on agricultural buildings is also permissible if the buildings were destroyed after September 7, 1942; also on destroyed industrial buildings.

The cost outlined above must include the total cost of labor and new material, also equipment, architect and engineer's fees, insurance charges and financing cost. The cost must also include any mechanical apparatus or fixtures which become a part of the structure.

Used material is not included in the cost, therefore the contractor may use $200 worth of new galvanized iron and $5,000 worth of used galvanized iron and still start construction without obtaining permission. Any used equipment as, for instance, the fan, may be

used without obtaining permission providing the ownership of the fan has not changed hands. In using used material, the cost of labor must be considered in the cost requirements outlined above. Lastly, the cost restrictions outlined are for a 12-month period, so you cannot do $200 worth of reconstruction in January and another $200 worth of reconstruction in April of the same 12-month period.

If the materials you expect to use do not require priority assistance, as, for example, brick, but you cannot begin construction without permission, then application is made on Form PD-200 or Form PD-200a with the local FHA. If priority assistance is necessary, then application should be made on one of the blanket orders or should be filed as a PD-3a form. As of October 1, 1942, application for priority assistance must be made on a revised PD-200 obtained from the local offices of WPB or FHA.

Blanket Maintenance Rating

On industrial work, since September 15, 1942, operators of industrial plants have been given permission by WPB to apply for blanket authorization to cover miscellaneous construction work over a period of not more than 6 months. Thus routine individual construction, except single jobs estimated to cost more than $5,000, may be included in an application for a blanket authorization. Where the authorization is granted, the applicant must file within two weeks after the expiration of each period of the term of the authorization a report covering the work performed, its cost and the materials consumed. Thus, an industrial firm might have a blanket authorization under which the sheet metal contractor can do miscellaneous repair and maintenance work during a period of six months without going through the formalities of obtaining permission and extending priority ratings for each small individual job. The industrialist would have a blanket priority rating as well as permission. The contractor would use this blanket rating on all his orders.

Order L-41-b, issued July 15, 1942, provides that Order L-41 shall not apply to construction commenced prior to January 1, 1943, which is necessary to the conversion or substitution of heating equipment to permit the use of coal for oil, gas or electricity in the 17 states first listed in Order L-56 discussed later.

◆

M-21-b

(Steel Warehouse Order)

Issued—September 4, 1941
Amended—October 30, 1942
Application Forms—PD-83, PD-83a, PD-83e, PD-83f, PD-83g
Application—Made to the Director General for Operations
Priority Rating—Each material carries its own rating

SUMMARY

SUPPLEMENTARY Order No. M-21-b is a warehouse inventory control order and therefore does not affect the contractor excepting that the order establishes the quantities of the materials which the jobber may carry for resale to the contractor. Warehouses for our industry operate on two schedules—Schedule A and Schedule B of materials defined in the order.

Warehouse Rated Quotas

Schedule A product inventories which include tin and terne plate (short ternes) and galvanized sheet and strip, are computed on the basis of 100 per cent of the tonnage of such product shipped by the warehouse from stock during the first calendar quarter of 1941. Thus the warehouse is permitted to carry 110 per cent of the tonnage of tin and terne, of which 70 per cent may be ordered from the mill on a rating of A-3 or higher; a quantity of galvanized sheet and strip 110 per cent by tonnage, of which 70 per cent can be ordered at an A-3 rating. Schedule B of this order includes galvanized sheet and strip including corrugated and for the warehouse whose base tonnage of all products for any calendar year was 120,000 pounds or less, that warehouse may accept its annual quota from the producer at any time providing no more than two minimum carloads are accepted in any quarter.

As the order operates, each warehouse can have a quota established for schedule A products and will have issued to it a certificate assigning a preference rating of A-1-k to deliveries of iron and steel to such warehouse within such quota. Deliveries of schedule B products to the warehouse are assigned a preference rating of A-3 up to the percentage of the tonnage which the jobber holds under schedule B.

A-10 Quantities

As pointed out in American Artisan, June, 1942, page 26, and August, 1942, page 17, the particular feature of M-21-b Order is the amount of material which the jobber may sell to the contractor on low rated orders for repair and maintenance. As M-21-b now stands a jobber may sell either 5 per cent of his quarterly quota of all such products on a rating of A-10 or a total of 150 tons of all such products per quarter, whichever amount is the greater. This revision in the order, dated June, 1942, hopes to keep low-rated repair orders flowing by permitting the jobber to obtain sufficient material to satisfy these small repair orders. However, it would seem that eventually small jobbers must be permitted to sell more than 5 per cent or 150 tons of material on low-rated orders as more and more repair work becomes necessary.

Temporary Quotas

On December 31, 1942, WPB announced a system of temporary supplementary quotas intended to enable iron and steel warehouses to rebuild their stocks. Order M-21-b, as amended, permits a warehouse to exceed its quota for the first quarter of 1943, provided that the warehouse keeps within its total allotment for the period January 1, 1942, through March 31, 1943. The announced purpose of this arrangement is to permit warehouses to catch up on tonnages that they would have received had they been able to obtain their full quarterly quotas during 1942. But because mill shipments lagged behind the general level of preference ratings, warehouses were not able to obtain their full quotas and the above amendment is intended to permit replenishing of stock providing the warehouse can obtain materials.

L-63

(Suppliers Limitation Order)

Issued—April 6, 1942
Amended—August 13, 1942
Application Form—PD-336
Application—Not filed but kept on file for two years
Priority Rating—No rating

SUMMARY

LIMITATION Order L-63, in brief, restricts a "suppliers" inventory to a certain permissible maximum. By suppliers is meant any jobber, dealer, retailer, branch warehouse or producer or other person performing a similar function.

The restrictions of the bill are briefly that no supplier shall accept any delivery of supplies which will increase his inventories above a permissible maximum and no person shall make to any supplier any delivery when these deliveries will increase his inventories above the permissible maximum.

The maximum permissible inventory shall be either: (1) Twice the dollar value of the sales of such supplies shipped from the jobber's inventories during the second preceding calendar month, or (2) two-thirds of the dollar value of the sales of such supplies shipped from the jobber's inventories during the three preceding calendar months.

Suppliers located in the Mountain or Pacific time belt may have an inventory either equal to three times the dollar value of the sale for the second preceding calendar month or the dollar value of the sales shipped from inventories during the three preceding calendar months.

Order L-63 does not apply to any jobber whose cost value of his total inventory of all supplies, including consigned stock, is less than $20,000 and the cost value of each type of supplies as listed in the order (Builders' Supplies, Construction Supplies, Hardware Supplies, Plumbing and Heating Supplies, etc.) is less than $10,000.

A jobber is permitted to purchase and store an amount of seasonal lines equal to those which he purchased in the peak period of a comparable period of the preceding year, but his peak period shall not exceed 90 days' duration.

A supplier may accept delivery which will increase his stock above the permissible maximum if he must order the items in commercially procurable shipping quantities.

A jobber may accept delivery of specific items when his total stock exceeds or will exceed by acceptance of this order his maximum permissible inventory, but he may do this only to the extent necessary to bring his inventory of the specific items up to a dollar value equal to the sale of the items as shipped during the preceding month.

Suppliers must fill out Form PD-336 on or before the 20th day of each month, and must retain this form for a period of at least two years for inspection.

The Blanket Orders (P-Orders)

THE general term "Blanket Order" was designed to simplify and eliminate a large part of the paper work required in the case of the individual certificate. Where the individual certificate assigns a rating to obtain delivery of material entering into production under a particular contract, the blanket order assigns a general rating to facilitate the acquisition of materials entering into the entire production of a given product. For example, a blanket order may assign to the builder of homes in a project an A-3 rating for the acquisition of material entering into the construction of the houses.

Certain blanket orders also provide ratings for the delivery of materials entering into the repair and maintenance of and operating supplies for industries considered essential to the war program. For example, Order P-84 assigns a blanket A-10 rating to all materials required to maintain plumbing and heating installations.

Generally speaking, blanket orders are being amended or revoked and many of the industries formerly providing products or materials to satisfy P orders are now operating under the Production Requirements Plan. The changeover is being undertaken gradually and will not curtail the use of Limitation or Conservation orders which will continue to be used in conjunction with the Production Requirement Plan.

Blanket orders, in general, are issued originally to manufacturers engaged in some business allied with war work. Under most blanket orders, a rating is assigned by issuing a copy of the order addressed to the particular manufacturer or the industry. Each document issued bears a serial number which will serve to distinguish it from documents issued to other recipients.

During the transition period, following July 1, 1942, you may apply or extend a blanket rating as outlined under Priorities Regulation No. 3. The person to whom a blanket order is addressed, applies the rating. His supplier extends the rating.

Repair and Maintenance Order

One of the most important provisions of the general blanket order series is the provision through several key orders to provide material and equipment for repair and maintenance. Generally speaking, these repair and maintenance blanket orders are intended to insure the continued operation of industries essential to the national welfare. One example of the repair and maintenance blanket order is P-84 discussed in another section.

Usually, all the orders covering repair and maintenance under the P series carry a blanket rating; for example, P-84 carries a blanket rating of A-10. Many essential industries have been assigned a blanket order number, as for example, P-46 covers repair and maintenance for utilities, P-56 covers repair and maintenance for mines; in such cases the

producer applies on the special application form for the necessary blanket rating. In cases where no order covers the particular industry, application is made in the form of a letter over the signature of the applicant.

In one special case, Order P-100, the order is issued to the general public and anyone coming within its terms may use the rating without making application to the government and without the issuance of an order specifically addressed to him. The person to whom a blanket rating is originally issued may apply the rating to his suppliers at any time before the expiration date of the blanket order.

P-19-d

(Publicly Financed Defense Housing)

Issued—September 9, 1941
Amended—April 20, 1942
Application Forms—PD-200 and PD-200A
Application—Made by the owner of the site.
Priority Rating—Open, given for the individual project

SUMMARY

THE rating assigned to the project is to be applied to the delivery of materials to be physically incorporated into publicly financed defense housing where these materials are included in the Defense Housing Critical List. Application and extension of the preference ratings are governed by Priorities Regulation No. 3.

P-19-h

(Privately Financed Defense Housing)

Issued—March 4, 1942
Amended—July 7, 1942
Application Forms—PD-200 and PD-200A
Application—Made to Field Office of FHA for area
Priority Rating—Open, given for individual project

SUMMARY

THE preference rating assigned is to be used to obtain materials required for physical incorporation into the project. Deliveries are made to the builder or his authorized sub-contractor. Sub-contractor uses builder's project rating. Rating also used for "expendible" materials—(materials consumed like forms, scaffolding, tools). Records must be kept. Application and extension of ratings are governed by Priorities Regulation No. 3.

P-55

(Construction of Defense Housing)

Issued and Amended—March 3, 1942
Application Forms—PD-105
Application—Made by the builder to the Director General for Operations, Washington
Priority Rating—Open, given for the individual project

SUMMARY

THE preference rating assigned is to obtain delivery of materials used in privately financed defense housing specified in the order. Defense housing is a dwelling located in a defense area, to be occupied by a defense worker, cost of construction including lot must not exceed $6,000 or to be rented for $50.00 per month or less. The builder applies the granted rating for deliveries of specified materials and quantities as approved. The supplier may not apply the rating except to deliveries of defense housing material included in the "Defense Housing Critical List." Manufacturers (furnaces) supplying materials materially altered in form to whom Order P-55 is extended may not use P-55 ratings to obtain their materials, but must operate under the Production Requirement Plan. Application and extension of preference ratings are governed by Priorities Regulation No. 3.

P-84

(Plumbing and Heating Emergency Repairs)

Issued—March 13, 1942
Amended—August 11, 1942
Application Form—Blanket rating
Application—Automatically applied to orders
Priority Rating—A-10

SUMMARY

PREFERENCE Rating Order P-84 grants an automatic preference rating of A-10 to deliveries of material required for emergency repairs of plumbing and heating equipment. This rating should be applied only when repair material may not be obtained through the use of any other blanket order such as P-100, P-56, etc. The installer need not make any application for a preference rating. Any one classified as an installer under this order may extend the rating. The use of the rating may be initiated only by a recognized installer. A jobber furnishing the materials to the installer may not use this rating unless it has been properly extended to him. Application and extension of preference ratings are governed by Priorities Regulation No. 3, as amended.

However, on any purchase order of $10 or less, an item which costs the installer $4.99 or less is deemed an emergency item. No endorsement on the purchase is required. If the total purchase order is more than $10 an endorsement is necessary, even though no one item costs the installer more than $4.99. If the total purchase price is $10 or less, but one item costs $5 an endorsement is necessary.

Whenever the installer replaces (not repairs) a unit which cost the installer more than $50, he must secure a certificate from the ultimate consumer and keep such statement attached to a copy of the Purchase Order for two years. This owner certification must state that the repair of the unit is impracticable and must also give the following data: 1—The unit being removed by name; 2—The part or parts of the unit which failed; 3—the age, model, make, size and serial number of such unit or part; 4—The replacing unit, its model, make, size and serial number.

P-84 does not permit an automatic A-10 to be applied to secure copper or copper-base alloys in sheet form and the order specifies that where a less critical

material can be used, it should be used if possible.

Considerable argument has arisen as to what the order means by "Emergency Repairs." WPB defines Emergency repairs as: 1—installation of equipment calling for more material than that being replaced is permissible if less critical material is substituted for that which is more critical; 2—prohibition against a substitution more extensive than that which is necessary to replace worn out or damaged parts does not mean that identical parts must be replaced. For example, coal burning furnaces are permissible replacements for oil-burning or gas-burning equipment. Third, steel equipment can be replaced by cast iron equipment, even though the substituted equipment is heavier than the steel furnace removed. Also, substitution of iron and steel for copper and copper-base alloys is permissible even though the substitution be heavier than the metal replaced.

P-100

(*Repairs to Property and Equipment*)

Issued—December 18, 1941
Amended—No amendment
Application Forms—PD-304, PD-305, PD-306
Application—Automatic priority rating
Priority Rating—A-10

SUMMARY

PREFERENCE Rating Order P-100 grants a preference rating of A-10, automatically, to *producers* for the acquisition of such material as operating supplies or for the maintenance or repair of their property and equipment. It should be noted, however, that when a general preference order (E or M order) assigns a specific rating to deliveries of any particular material for the use of a particular industry or for a specific purpose, this rating A-10 under P-100 does not apply.

The rating is applied by the *producer* and is extended by his supplier in accordance with Priority Regulation No. 3. A producer under the order is defined as a user of material for his own maintenance, repairs or operating supplies. Thus, a warehouse may apply the rating for material used in maintaining its own building, but it may not use the rating to obtain material sold to customers for their operations. Generally speaking, warehouses, manufacturing firms, government units, charitable institutions, carriers, educational institutions, hospitals and so forth are producers under P-100, so far as their own buildings and equipment are concerned. Repair is defined as a means of restoring the producer's property and equipment to a sound working condition.

In operation, a manufacturer of wood kitchen cabinets, for example, might need repairs to his wood waste exhaust and collecting system. This cabinet manufacturer would then send an order to the sheet metal contractor to repair the blowpipe system and would specify in accordance with the simplified certification shown in the explanation to Priority Regulation No. 3 that certain materials were required to repair his system and would assign himself an automatic A-10 rating. The contractor, in turn, would furnish to the jobber an A-10 rating over the simplified certification listing order P-100 as the basis for the order.

The problem which has arisen in connection with P-100 is that the automatic A-10 rating is not high enough to obtain material, but it is expected that as Controlled Materials Plan and other new orders come into effect, the jobber will automatically be provided with more materials which he can sell under an A-10 rating. This is described in more detail under L-63, and under M-21-b.

P-110

(*Remodelling Projects*)

Issued—April 10, 1942
Amended—No amendment
Application Forms—PD-406
Application—PD-406 in triplicate filed with local FHA office for the area
Priority Rating—A-5

SUMMARY

PREFERENCE Rating Order P-110 exempts low-cost remodelling projects from the stop-building order L-41 which restricts construction. P-110 assigns a rating of A-5 to deliveries of materials required to remodel houses, so that additional defense living accommodations may be secured. Any such projects to qualify as a remodelling project must be located in a defense housing critical area; the project when remodelled must provide more housing accommodations than existed before remodelling; the total cost of the critical material must not exceed $800 per structure. However, critical materials may be used up to, but not exceeding, $100 times the number of rooms in each additional housing accommodation. Only living, dining, sleeping rooms, bath rooms and kitchens are to be counted. Each such room is counted as one room. Kitchenette and dinette should be counted as one-half room each. For example, in remodelling to three bedrooms and a kitchenette, not more than $350 worth of critical materials may be used.

The owner of the project may not rent the accommodation for more than the monthly rental set forth in the approved application, generally $50 per month. The maximum sale price must be under $6,000 for a single-family structure. To secure the A-5 rating, builders must file Form PD-406 in triplicate with the local FHA district office. If the application is approved, it will be returned to the builder and the application will show the quantities and kinds of critical materials which may be obtained with the rating. Application and extension of preference ratings are governed by Priorities Regulation No. 3. Critical material or defense housing material means only material included in the Defense Housing Critical List.

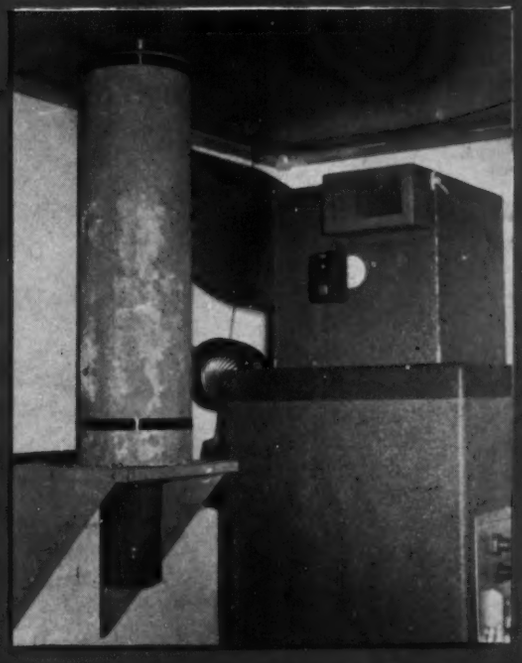
To explain the operation, assume that the owner of a large old dwelling wishes to remodel the structure to make four small apartments. One thing which is necessary is a new central heating system, so installed that each of the four new apartments may have adequate heat. The owner makes application to the local FHA and states that a new heating system is required. Since the heating system uses critical material, the heating system alone can not cost more than $800 for the structure, so the owner or builder must

(*Continued on page* 127)

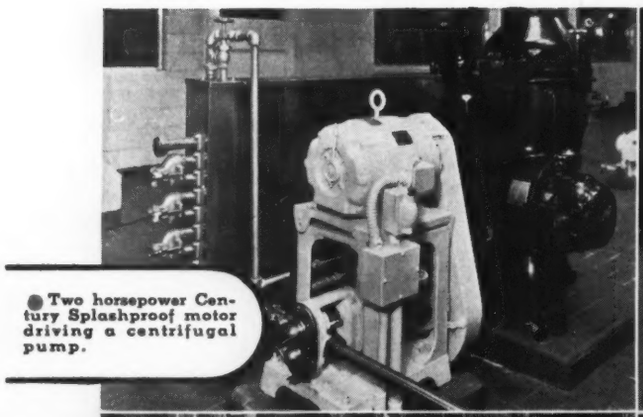
AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

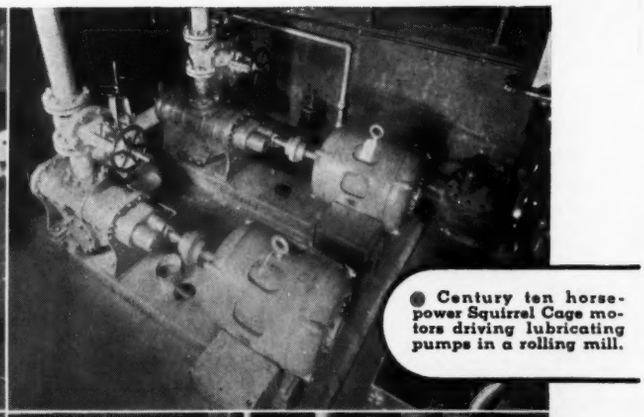
SECTION



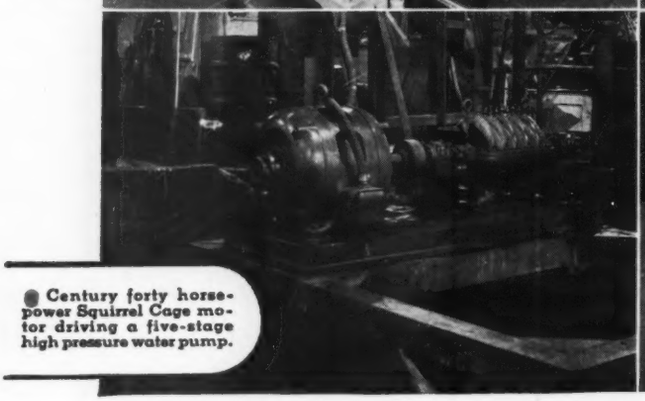
DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



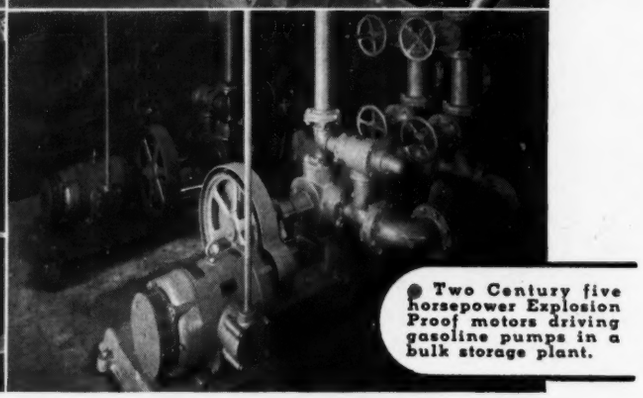
Two horsepower Century Splashproof motor driving a centrifugal pump.



Century ten horsepower Squirrel Cage motors driving lubricating pumps in a rolling mill.



Century forty horsepower Squirrel Cage motor driving a five-stage high pressure water pump.



Two Century five horsepower Explosion Proof motors driving gasoline pumps in a bulk storage plant.

CENTURY MOTORS Meet Your Centrifugal or Reciprocating Pumping Application Requirements In All Types of Atmospheres—on Land or Sea

There's the *right* Century Motor for these and many other pumping requirements:

Water	Gasoline
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—properly protected against these surrounding conditions:

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Acid and Alkali Fumes
Dusts
Coolant Spray
Heat and Cold
Moisture
Explosive Grain Dusts (Class II, Group G)
Explosive Gases (Class I, Group D)

304

Century Motors are built to meet practically every type of pumping application efficiently and effectively — on land or sea.

Depending upon the surrounding operating conditions, pump installations may require *Century Open, Drip Proof, Splash Proof, Totally Enclosed Fan Cooled, or Explosion Proof Motors.*

To assure peak performance, it's important to select the Century Motor with the proper electrical characteristics. These may vary from low starting torque—low starting current for centrifugal pumps, to high starting torque — normal starting current for reciprocating or gear pumps and for starting other dead load applications.

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Orders Affecting Warm Air Heating

Most of the restricting orders which affect the warm air heating industry directly are included in the various limitation orders (L orders) which at the end of 1942 are pretty largely stop production and stop sale orders on the various types of heating equipment used by the industry. As the name for this series of orders implies, Limitation Orders, generally are applied to a complete industry through the restricting of the manufacturers' production. The intent of the orders usually is to curtail the use of a certain fuel, such as oil or gas, or the consumption of critical materials by reducing the number of units which the manufacturers may make. Following are summaries of the various limitation orders affecting the heating industry.

L-22

(Furnace Production Limitation Order)

Issued—April 11, 1942
Amended—July 29, 1942
Application Form—Producer operates under PRP
Application—Producer operates under PRP
Priority Rating—No rating except PRP

SUMMARY

THE furnace limitation Order L-22 states, in brief, that no Class A manufacturer shall manufacture in 1942 more than fifty per cent of the total weight of iron and steel used by him for furnaces in the calendar year 1940. A Class A manufacturer is defined as any manufacturer or assembler of furnaces who manufactured or assembled 8,000 furnaces or more during 1940.

During the calendar year 1942, no Class B manufacturer shall incorporate into furnaces more than 90 per cent of the iron and steel used by him for furnaces in the calendar year 1940. A Class B manufacturer is any manufacturer or assembler of furnaces who manufactured or assembled fewer than 8,000 furnaces during the calendar year 1940.

The order does not cover units commonly known as space heaters or floor furnaces.

An interpretation to Order L-22 permits replacement parts to be manufactured *over and above* the quotas of iron and steel consumed by order L-22. No restrictions are placed on the amount of iron or steel to be used for replacement parts under Order L-22, but it is suggested that readers study Order L-22-a.

L-22-a

(Supplementary Limitation Order on Furnaces)

Issued—December 14, 1942
Amended—No amendment
Application Form—Producers operate under PRP
Application—Producers operate under PRP
Priority Rating—No priority rating involved

SUMMARY

ORDER L-22-a specifies that from and after December 31, 1942, no person shall manufacture, fabricate or assemble any *steel* furnace except that the manufacture, fabrication or assembling of steel *military* furnaces may be specifically authorized by the Director General for Operations on Form PD-704. The Director General in granting such authorization may specify the manufacturer and the place of delivery.

Furnace, for the purpose of Order L-22-a, is defined as any direct-fired, air heating unit which is designed for the purpose of heating the interior of a building including, but not limited to, any heating device commonly known as a gravity or forced warm air furnace, a free standing heater, or a floor mounted industrial unit heater, for use with or without air distribution pipes. Furnace does not mean a domestic heating stove as defined in Supplementary General Limitation Order L-23-c, extended surface heating equipment as defined in General Limitation Order L-107, or a direct-fired, suspended unit heater, or a floor or wall furnace.

Steel furnace is defined as any furnace, the body or drum of which is made wholly or partially of steel.

Military furnace is defined as a furnace manufac-

tured for delivery to or for the account of the army, navy, war shipping administration, or the Maritime Commission, or the Defense Plant Corporation.

An analysis of this order indicates that steel furnace production will stop and that furnaces used for defense housing will be cast iron in the future and not steel. Other orders covering the use of oil (L-56) or gas (L-31) or manufactured gas (L-174) have previously declared oil and gas is inelligible for heating.

A most important section of L-22-a is that referring to replacement parts. The order says "from and after December 31, 1942, no person shall put into process in the manufacture of replacement parts for steel furnaces in any calendar quarter, a greater weight of iron and steel than 200 per cent (200%) of the weight of iron and steel put by him into such process during the corresponding calendar quarter of 1940." This seems to indicate that at least twice as much iron and steel will be permitted for replacement parts as the industry used in 1940.

As this issue goes to press, there is a question regarding the small and large furnaces to be used in single-family defense houses or multi-family defense houses, or dormitories where the so-called PB-18 upright, floor furnace, also standard type of gravity and forced warm air furnaces, and horizontal heaters (in dormitories) have been specified up to date by FHA, FPHA and WPB. FHA and other housing agencies are not specifically mentioned in L-22-a unless the function of specifying furnaces for these agencies may be taken over in 1943 by Defense Plant Corporation. A ruling on this point is being requested.

L-31

(Natural Gas Order)

Issued—February 16, 1942
Amended—November 12, 1942
Application Forms—PD-673 and PD-672
Priority Rating—No priority rating involved

SUMMARY

GENERAL Limitation Order L-31 is, in brief, a "stop use of natural gas for house heating" order in certain areas of the country. The order permits utilities to continue to supply gas for house heating loads providing the utility assures WPB that it has adequate capacity and sees no future scarcity of gas. However, since the issuance of the order, to our knowledge, no utility has taken advantage of this clause and the result is that in the areas specified by L-31 no more gas-heating has been installed.

The section of the order relating to residential consumers specifies that no utility may deliver to a residential consumer and no such consumer may accept natural gas for the operation of any space heating equipment in the areas listed in Exhibit B of the order, unless the equipment was installed or converted to natural gas before November 30, 1942, or in the case of new construction such equipment was specified and installed prior to March 1, 1942, and the foundation under the main part of the structure in which the equipment is to be installed was completed in Area 1, prior to March 1, 1942, in Area 2, prior to March 20, 1942, in Area 3, prior to May 15, 1942; in Area 4, prior to August 10, 1942; in Area 5, prior to September 15, 1942; in Area 6, prior to November 30, 1942.

The order permits replacement of one gas furnace with a new gas furnace, providing the original gas heating equipment was of a central system type. You may not replace with a new gas furnace, therefore, any gas-fired space heater. You may not replace coal-burning or oil-burning equipment with gas-fired heaters of any kind.

Any appeal from the order for space heating should be made on Form PD-673.

Special types of gas-consuming ovens, driers and furnaces for industrial use are permitted providing the manufacturer using the equipment classifies under Exhibit A of the Order.

The six areas listed in the order are quite extensive and have been published previously in AMERICAN ARTISAN issues of March, 1942, page 34, May, 1942, page 28, September, 1942, page 31, December, 1942, page 25.

If any contractor does not know the area in which he is located, information can be obtained from the area or local WPB or FHA office.

L-56

(Fuel Oil Order)

Issued—October 1, 1942
Amended—No amendment
Application Forms—No specified forms; made by letter or in person to the area Office of Petroleum Co-ordinator for War
Application—Made by the person appealing
Priority Rating—No rating involved

SUMMARY

LIMITATION Order L-56 restricts the transfer of fuel oil within designated areas and prohibits the use of oil for a number of purposes not affecting the warm air heating industry.

For the purpose of the order, fuel oil is defined as any oil including grades No. 1, 2, 3, 4, 5, 6, bunker C, Diesel oil, kerosene, range oil, gas oil, or other liquid petroleum products used for the same purposes as the above designated grades.

As first applied, L-56 forbad delivery of fuel oil for use in any new equipment in 17 Atlantic Coast states and the District of Columbia and in the Western states of Oregon and Washington.

Fuel Oil Rationing

Order L-56, summarized above, laid the ground work for the fuel oil rationing program announced October 15, 1942, which replaces Order L-56 in effectiveness so far as oil consumers are concerned.

In brief, the fuel oil rationing program divides the country into four zones on a degree-day basis and assigns to each zone a maximum amount of fuel oil to be delivered in each of five periods which the consumer may use to heat his building with oil.

The intent of the fuel oil rationing program is to reduce oil consumption and to this end a formula has been applied which basically reduces the fuel consumed by any given user 33 1-3 per cent. Specifically, however, the formula applied reduces fuel oil consumption by a percentage less or more than 33 1-3 per cent and cuts the efficient oil user by as little as 12 to 15 per cent, but penalizes the wasteful fuel oil user by reducing his consumption as much as 50 per cent from the amount of oil used in 1941.

The complete oil rationing formula and method of

calculating and areas covered by the order or described in American Artisan, October, 1942, page 32, and the formula was converted to a convenient chart form in the November American Artisan, page. 43.

As this issue goes to press, Office of Price Administration and Office of Petroleum Co-Ordinator, have granted a 10 per cent increase for Period 2 for 13 Mid-west states where a more than ordinary severe winter has been prevalent. Also in this area and in the 17 Eastern states the date on which coupons for Period 3 are effective, has been advanced several days to permit users to obtain oil before the beginning of Period 3 as specified in the original rationing order. Considerable protest has arisen over the order and householders have been slow to adopt methods which will reduce oil consumption by reducing heat loss. It appears as though the warm air heating industry will have to assume an active, co-operative part during the winter in showing owners how they may be comfortable under the rationing program. The only relief which seems to be in sight is the hope for a very mild winter. Increased stocks of fuel oil for heating do not seem to be in sight.

L-74

(*Oil Burner Production*)

Issued—April 15, 1942
Amended—June 4, 1942
Application Form—No form involved
Priority Rating—No rating involved

SUMMARY

AS OF April 15, 1942, no person may produce, fabricate or assemble any Class A oil burner except to fill an order bearing a rating of A-10 or higher. A Class A oil burner is a burner which has a capacity for burning oil at a rate in excess of 15 gallons per hour or which is strictly designed for use in cooking, heat treating or processing.

After May 31, 1942, no person may produce, fabricate or assemble any Class B oil burners. A Class B oil burner is any oil burner other than a Class A burner, and of course includes domestic sizes.

This order relates only to the manufacturers of oil burners. It does not prohibit or restrict the manufacture of replacement parts for any type of oil burner, nor does the order relate to the sale and delivery of completed oil burners. Sale and delivery of completed oil burners and replacement parts are covered by Order L-79.

L-75

(*Coal Stokers*)

Issued—October 20, 1942
Amendment—No amendment
Application Forms—No forms involved
Priority Ratings—No priority ratings involved

SUMMARY

WHEN Limitation Order L-75 was made effective October 20, 1942, the order specified that Class B stokers (residential) may not be manufactured after the effective date. A Class B stoker was defined as a stoker using less than 60 pounds of coal per hour. Originally, the order specified that a Class A Stoker (industrial stoker using more than 60 pounds of coal per hour) must also stop production, but in order to assist manufacturers and institutions in converting from oil and gas to coal, an amendment, effective November 4, 1942, permits the manufacture and assembly of Class A stokers upon authorization by the Director or to fill an order accompanied by a Priority Rating. WPB is now issuing priority ratings high enough to obtain stokers where conversion is the goal.

On June 4, WPB amended the order to permit the assembly of small stokers from materials which were in the manufacturers hands on May 31. At that time Plumbing and Heating Branch, WPB, estimated that approximately 8,000 stokers could be assembled from parts on hand. In conjunction with Order L-75, Order L-79 (the Plumbing and Heating Order) was amended to relieve coal stokers from the freezing provision of L-79. This amendment to L-79 made available an estimated 70,000 stokers of all sizes and types in the hands of manufacturers, jobbers and dealers.

A further amendment was made on November 22, to Order L-75, eliminating the requirement for an A-10 rating for industrial stokers replacing other fuels. Industrial stokers can be purchased by application on form PD-668 to the local WPB office. At the present time manufacture of industrial type stokers is continuing.

L-38

(*Industrial Refrigeration Equipment*)

Issued—May 15, 1942
Amended—July 10, 1942
Application Form—PD-520
Application—Made to local office of WPB
Priority Rating—A-9 or higher required

SUMMARY

LIMITATION Order L-38 prohibits any producer, dealer or distributor of refrigerating and air conditioning equipment from installing any new such equipment after May 15, 1942, except to fill preferred and rated orders. Preferred orders are orders from the government war agencies and rated orders are from any person who has received an order or certificate assigning a preference rating of A-9 or higher specifically to the delivery of such equipment.

To assign such a rating WPB must rule the request essential and an essential industry is roughly considered processing, transportation, storage of food or dairy products, mining and manufacturing operations, testing and research laboratories. No comfort cooling installations are permitted.

The order prohibits the manufacture of all beverage dispensers, beverage coolers, mechanical refrigerators, self-contained air conditioners (room coolers) window-type air conditioners rated at a capacity of less than 2 h. p. or a refrigerating capacity of less than 2 tons, ice cream cabinets, evaporative coolers rated at 2,000 cfm or less at the discharge side of the unit, display cases.

L-123

(Industrial Machinery—Fans and Blowers)

Issued—May 26, 1942
Amended—November 24, 1942
Application Form—Application by letter
Application—Made to local WPB office
Priority Rating—A-1-c or higher

SUMMARY

PRODUCTS classified as "Industrial Machinery include: 1—Industrial Fans and Blowers, including attic type ventilating fans regardless of blade, diameter or motor size; centrifugal or squirrel-cage type fans; propeller or axial flow type fans; 2—Air Washers; 3—Heat Exchangers; 4—Industrial Dust Collectors; 5—Electric Motors, 1 h. p. and over.

Order L-123 affects the furnace industry because warm air furnace fans are claimed by General Industrial Equipment Branch, WPB, to be a blower and as such restricted in sale and manufacture by L-123.

L-123 permits delivery or acceptance of delivery of the five items listed above on an approved order carrying an A-9 or higher priority rating, accepted prior to August 27, 1942; or to current delivery on the above equipment bearing a preference rating of A-1-c or higher; accept delivery for an order placed by the War agencies; and accept delivery on any order approved by Director General for Operations.

L-123 does not restrict delivery on an order of less than $1,000 for parts to be used to repair or maintain a single piece of general industrial equipment or parts to be used to repair general industrial equipment when there is an actual breakdown or suspension of operations of a piece of equipment.

To place an order for such repair part, a purchaser must furnish his supplier with a certification which says, "I hereby certify that the above order is in compliance with Paragraph C of Order L-123. The order is for maintenance and repair parts as follows: (Parts required shall be itemized), signed by the company and the authorized priority official.

L-126

(Industrial and Commercial Air Conditioning Equipment)

Issued—July 3, 1942
Amended—No amendment
Application Forms—No forms, but a letter to WPB
Application—Made by letter
Priority Rating—At the discretion of the Director of Operations

SUMMARY

LIMITATION Order L-126 authorizes the Director General for Operations to issue schedules establishing required specifications for the production and use of any air conditioning equipment. On or after July 3rd, 1942, no such equipment shall be produced, fabricated, delivered, accepted or installed if prohibited by the terms of such schedule.

Air conditioning equipment is defined as any type of equipment (except a domestic mechanical refrigerator or domestic ice box) which is primarily designed to lower the temperature of matter or to regulate the temperature or humidity of air by mechanical, chemical or physical means, and includes all insulated inclosures, materials, parts and devices used with such equipment in causing the equipment to function. The specifications referred to include requirements to standardize type, sizes, models and forms of air conditioning equipment.

Effective July 3, 1942, refrigeration condensing units included under the order stopping production include condensing units in sizes below 1-6 h. p.; all water-cooled condensers up to and including 2 h. p.; all air-cooled units above 2 h. p.; duplex condensing units up to and including 20 h. p.; but permits production and installation of units accepted under order from the War Agencies or Lend-Lease.

The order also prohibits use of any ferrous metal except for soldering and brazing materials for protective coatings and stainless steel tubing, except tubing which forms integral fin tubing or that which has been made into returned bond and steel tubing other than integral fin of a greater wall thickness than a schedule set up in the order. Fin tubing is prohibited in manufacture, excepting a fin-tubing for use aboard ship.

The order also specifies the amount of non-ferrous metal per ton of refrigeration for water-cooled condensers and for self-contained condensing units and condenser assemblies.

L-174

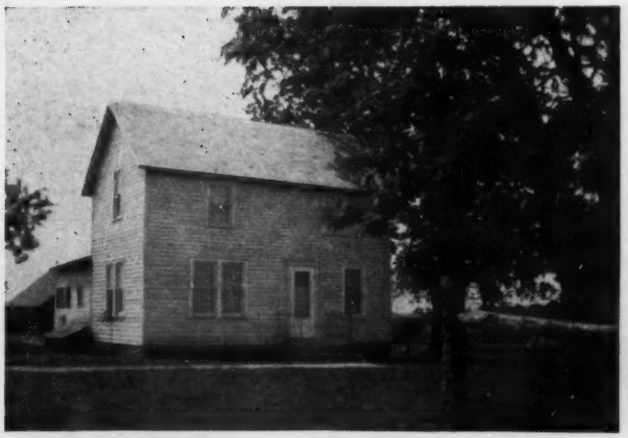
(Manufactured Gas)

Issued—August 25, 1942
Amended—November 12, 1942
Application Forms—PD-673
Application—Made to the Director General for Operations
Priority Ratings—No rating involved

SUMMARY

LIMITATION Order L-174 covering the distribution of manufactured gas is quite similar to Order L-31 covering distribution of natural gas. The order briefly specifies that unless otherwise directed by the Director, no utility may deliver to any residential gas consumer and no residential consumer may accept delivery of manufactured gas for the operation of any space heating equipment unless such equipment was installed prior to September 1, 1942, or replaces similar type space heating equipment of equal or greater capacity previously installed or operated at the same premises, whether by the same or by another consumer. Delivery of gas is also permitted to installations made prior to November 15, 1942, in new buildings or where specified for buildings with the foundation laid prior to September 1, 1942.

This order also clarifies one point—namely that any gas utility supplying a mixture of natural and manufactured gas is not subject to Order L-174, but is subject to Order L-31.



Exterior of the Claypool home and living room-dining room with cold air return in floor beside the door. There was no basement—now a pit 3 feet deep for the furnace, solves the problem.

Central Furnace Heat Is the Dream of Many Farm Families

By Hazel Claypool, Farm Wife

FURNACE heat is a much dreamed of luxury for many farm owners.

Very frequently farm owners believe that furnace heat is beyond their reach because a furnace means a basement under the house and basements cost money. The only other way furnace heat can be obtained is to tear down the old house and build a new one—and that costs money, too. Only if the old house is destroyed by wind or fire can both new house and basement without the new house cost be obtained.

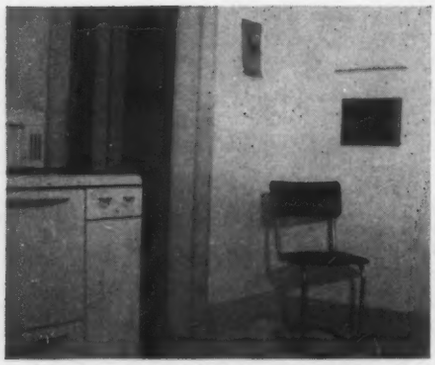
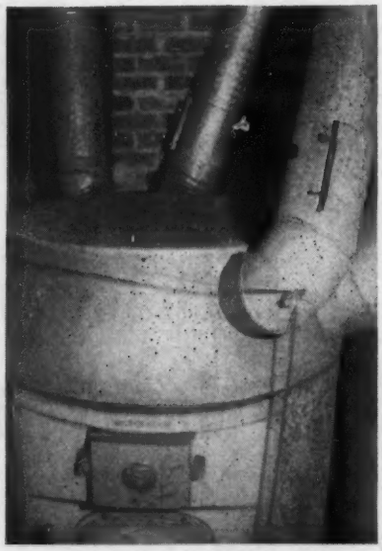
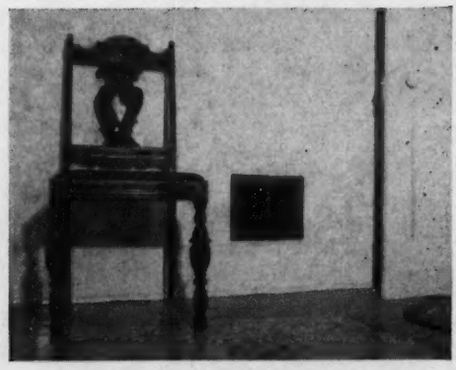
So the farm family continues year after year to shiver in their cold and drafty old houses and put up with the inconvenience and dissatisfaction of stove heat.

In 1939 we were able, after twelve years of renting to purchase a farm. It was ideal in every respect except the house. We planned to remodel the house, but knew that we would have to do our remodeling with limited funds. Our friends discouraged us no end; saying that we would be better off to build a new, tiny house with our money or live in the old one as it was for awhile. But after years of renting and living in drafty old houses, we were determined to have a comfortable house with furnace heat while the children were little and we needed real comfort most.

At first we planned to have a basement, but that would add materially to the cost of remodeling the house and we were a little doubtful about being able to drain it properly, because the land is low and level. So before we even started, I took our plans to the Furnace Man and asked him if it would be possible to heat the house without a basement and also without electricity. Electricity, you see, is one of the things in the future for us. But we were not willing to forego the comfort of furnace heat until we were able to have other modern conveniences. Twelve years in drafty farm houses had convinced us that furnace heat was the first consideration in the building of our own home.

So the Furnace Man said that he was quite certain he could heat the house well with gravity heat if we could put the furnace room three feet below ground level. That is what we did. and our house is heated so comfortably that if we were building a new one with unlimited means, I do not believe we would build a basement. In the case of our old house, we were able to have an extra bed room (as yet not plastered) and a bath room instead of the basement.

The heat pipes go directly up from the furnace and the warm air actually "blows" into the

No basements in farm homes and poor drainage makes many farmers believe that central furnace heat is impossible, but forced air is feasible and a gravity system installed as explained in this story will heat satisfactorily. For pitted furnaces registers must be in side walls of the first floor, as high up as possible. Final appearance may not be all we could wish —but comfort is much more important. These photographs, by the author, show location of the dining room register (upper left); living room (upper right); kitchen (lower left), and dining room pipe (upper center).

room from the registers. You would declare that we had a fan on the furnace. The house heats much faster with these vertical pipes than with the horizontal ones that are the rule with basement furnaces.

The registers are at about chair-back height in the living room and kitchen, and near the top of the door in the dining room. They are just over the baseboards upstairs. The main rooms of our remodeled house are in the shape of an "L" and the furnace room is in the corner. This allows all the heat pipes to go directly to the rooms, except the Northeast bed room and bath and the dining room. The pipe that leads to this bed room and bath was put in beneath the up-stairs floor and the down-stairs ceiling, and is entirely concealed. The dining room heat pipe is directly below it and runs along the ceiling of the kitchen and is plastered in and is in no way unsightly.

The cold air registers are in the dining room and living room on either side of the North front door and near the base of the stairs. For some reason the combination of the high dining room register and the cold air register near the stairs has made for us a draftless open stairway that we as well as the Furnace Man are quite proud of.

Our house is still in the making, so to speak. We plan another coat of paint this summer and some added plumbing this fall, but we have been Oh! so thankful for one winter of honest-to-goodness comfort. Now we do not have to worry about keeping the children closely covered on cold nights. We actually had less blankets on our beds on cold nights last winter than we do now on cool summer nights.

In real life, the Furnace Man is Mr. Herbert Drews and he has an Air-conditioning shop down on East Main Street in Danville, Illinois. As much as our furnace means to us, I am certain it is not the greatest of his accomplishments in the heating business. I hope that our furnace is only one of many "out-of-the-basement" heating systems that will be comfortably heating other farm homes when this War is won and we are able to have abundant supplies of steel for our peace-time needs.

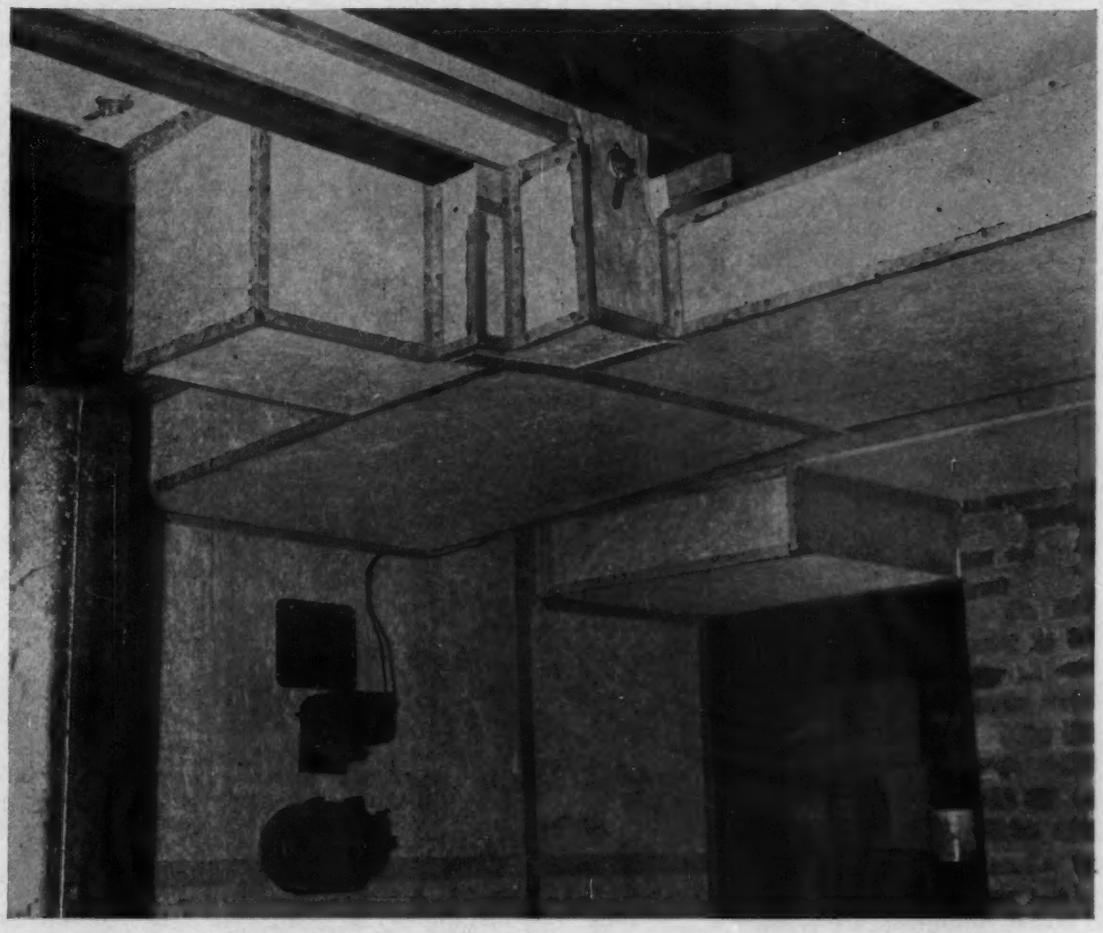
The Development of No-Metal Ducts

In the November, 1942, Artisan, pages 48 and 49, the Klomparens Lock Joint wood duct connectors were described and illustrated. Numerous readers faced with the difficulty of obtaining metal for duct work expressed a desire for more information on this wood and asbestos board—so this article reports the problems which lead up to the development of the idea and explains how the combination is engineered into the existing home market.

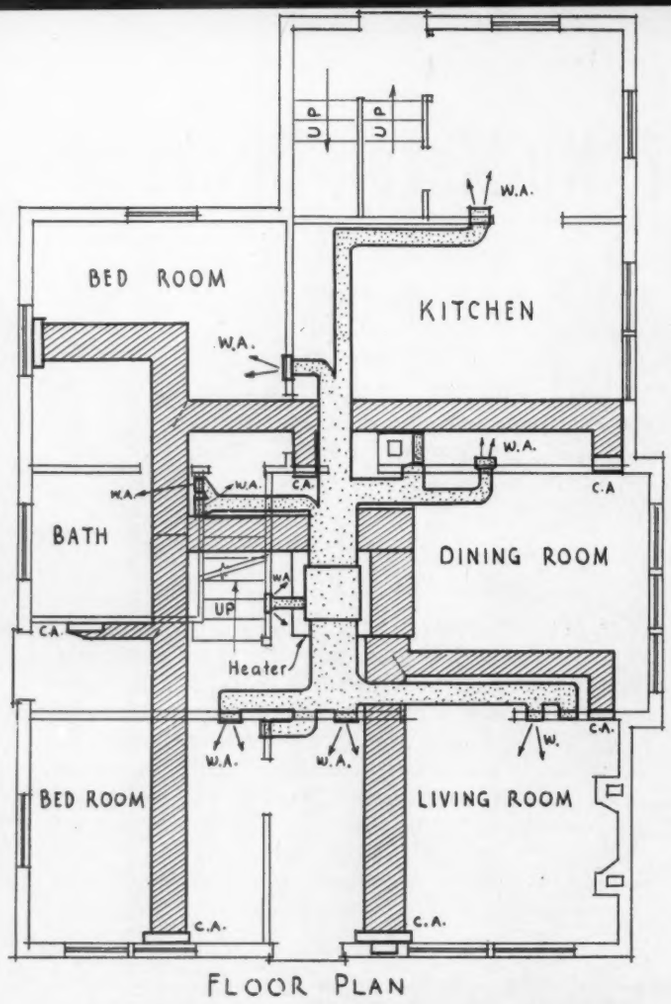
WARM air furnace installers and sheet metal contractors have, generally, accepted government's requests and demands that the industry use as little sheet metal as possible and have, overall, saved up to 85 per cent of the sheet metal normally used by making duct work of "substitute" boards with metal connectors to join the board panels together.

But, as reported in AMERICAN ARTISAN'S studies of "substitute" material ducts (April, 1942, page 56; May, 1942, page 38; May, 1942, page 71; November, 1942, page 47), about as far as the industry has gone is to use these materials for the duct panels with some metal for the connectors, fittings, stiffeners, etc. Attempts to build ducts without any metal, by nailing panels to wood strips, have not been successful or encouraging because such ducts either are far too heavy and cumbersome or they are not rigid enough and sag, bulge and distort.

Therefore, it is not surprising that Mr. Klomparens' idea for wood connectors, as described in



Job No. 1 using Flex Board panels, with metal corners, sheet metal screws and cement was generally "messy." It also used 14 gross of screws and a gallon of cement. Cementing edges to form corners took too much time waiting for the cement to set. Job, however, is airtight.



Plan of Job No. 1 showing basement duct work on which four men worked four weeks putting together the duct work shown in photograph on preceding page.

the November issue, requiring no metal and even eliminating the need for sheet metal screws, should be appealing.

In Mr. Klomparens' own description: "This idea of wood connectors sprang directly from his experiences with board and metal combinations, which either 'did not look very workmanlike' or were so excessively costly due to the extra field labor involved that he thought there must be some other way of doing the job." The Klomparens Lock Joint was the result of this thinking.

That this wood and board combination has a definite appeal to government engineers in specification departments is evidenced by the visits of hundreds of these officials to the Klomparens jobs which, fortunately, are within a few miles of downtown Washington. The studied opinion of these men is that this is certainly one answer to the demand for—no metal.

2000 Screws, 1 Gallon Cement

The evolution of the Lock Joint is shown in the photographs of Klomparens installations beginning with Job Number 1, where metal corners and cement were used to join the Flex Board panels. This is in an old house with 20 outlets. Here is Mr. Klomparens' description of the work: "We used in this installation 14 gross of sheet metal screws plus one gallon of adhesive (Miracle cement). The photographs show that in some places the sheet metal screws are quite a distance apart. Here we put the section in clamps, using adhesive to join the panels and allowed the adhesive to dry in the clamps. This took too long for the adhesive to set. We then tried using the adhesive and drawing the pieces tight with sheet metal screws. This also took too much time. Also the metal corners had to be formed, drilled, screwed and the panels drilled for the screws.

"In the end, all the stacking to the second floor (see plan), of which there are four mains and two offsets, are screwed together with the screws four inches apart. For the casing we used 24-gauge metal corners and Flex Board panels with screws on four-inch centers. In our opinion, we used a terrific amount of labor on this job—four men, four weeks at $1.00 to $1.25 per hour wage rate.

"However, the final operation had one interesting characteristic. We used a large blower to distribute the supply air to the twelve rooms and obtained a very uniform distribution. Just for experiment we put a small pulley on the Lau blower in order to speed up the blower and we found there was no noise at any speed despite the fact that there are no customary canvas connectors between the blower and the casing. Neither is there any noise of air passing through the ducts.

"On this Job Number 1 we used about 90 pounds of metal for the corners where we would have used at least 800 pounds of metal for an all-metal duct and casing installation.

"Despite the drawbacks we see as installers, the job has received many favorable comments from Washington officials who inspected the work."

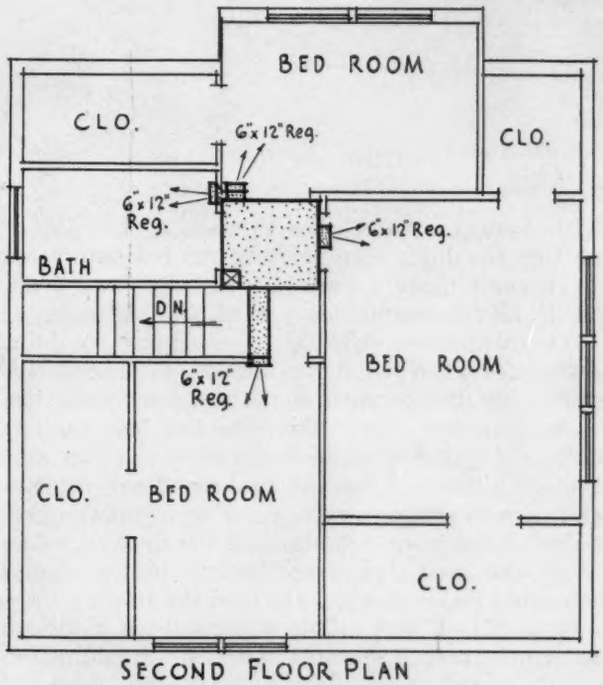
Screws Without Cement

The next step in the evolution is shown in Job Number 2, where the furnace has a metal casing, but a board plenum is carried up to the second floor ceiling for second floor distribution. The photograph shows the quadrant damper in the run to the front bedroom. The ceiling of the hall was closed and splitter and quadrants were placed in the ducts to balance air delivery. A large quadrant damper was also placed in the main stack just above the outlets in the lower floor. This is a gravity furnace in an eight room house.

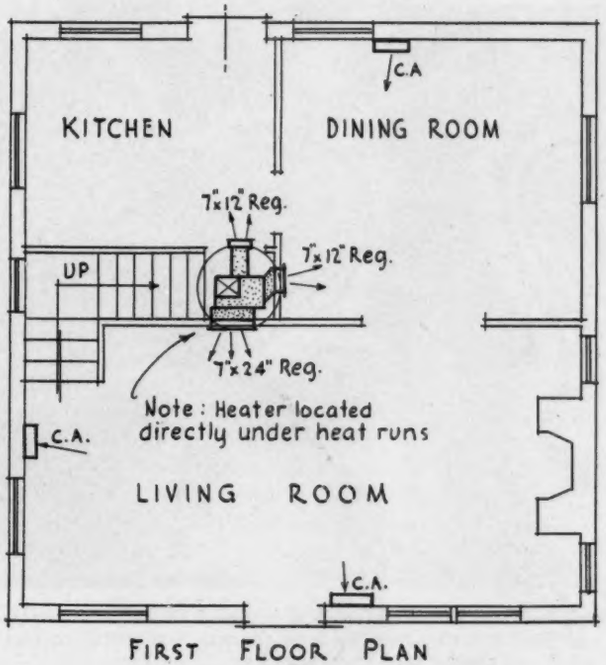
Mr. Klomparens described the installation: "Only 24-gauge metal corners (2 inches on each angle leg) and sheet metal screws were used—no adhesive. It was necessary to space the screws 4 inches to 6 inches apart. We made the metal connectors and corners in our shop and cut the panels on the job. Because of working space limitations we could not make up fittings as sections but had to cut and install pieces as the job progressed.

"We do not consider Job Number 2 as neat an installation as Job Number 1. We eliminated the cement and the time required for the cement to set, but we still used as many screws per running

On Job No. 2 the furnace stands in a kitchen closet with a riser going straight up to a plenum against the second floor ceiling as shown below. Metal corners are 24-gauge angles. Screws were placed about 6 inches apart. No cement used. Much hand labor drilling holes, running screws, cutting and fitting panels ran field costs excessively high.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

foot of duct and we still had to drill or punch the angles and drill the board and insert the screws, all of which ran our field labor cost to an excessive degree."

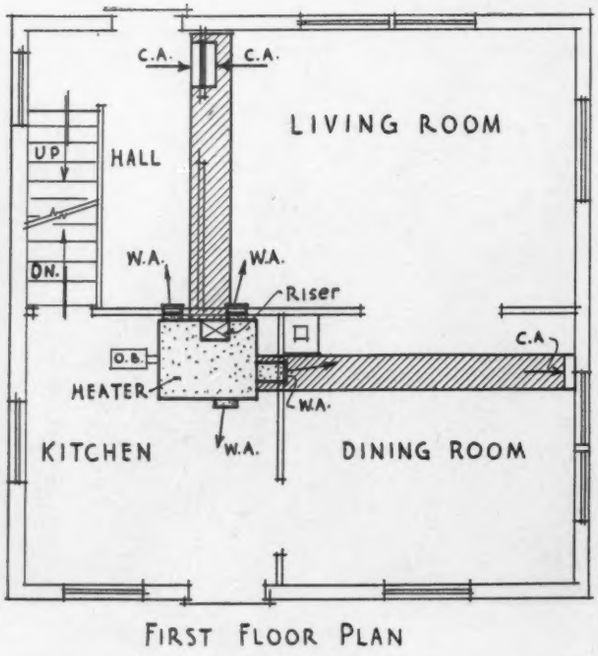
Job 3—Still Less Metal

Job Number 3 is another old house installation with the furnace in the kitchen, as shown in the photographs. To place the furnace, a concrete base was laid about 30 inches below the floor and the oil burner was set on this base. A hole four feet square was cut in the kitchen floor under the casing. The supply air is put into the first floor rooms near the ceiling, while an extended plenum up to the second floor ceiling starts the second floor branches to registers in hall partitions as shown in the photograph (page 76).

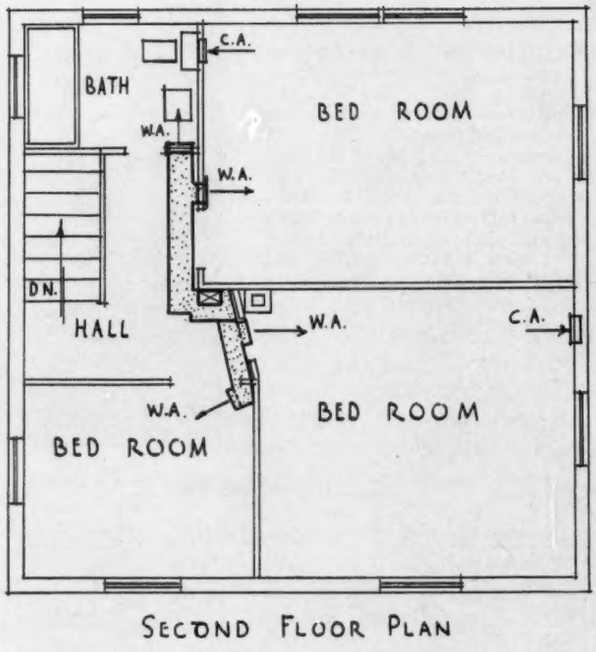
How the casing and ducts were assembled is described by Mr. Klomparens: "We used 3/16-inch Flex Board for the casing, the plenum and the ducts. We used a less expensive metal corner —single angle for the ducts—and metal screwed corner and board together with screws about four inches apart. We made the corners in our shop of 24-gauge metal and cut our panels on the job piece by piece. Casing corners are double seamed, screwed as shown, and when the casing and plenum were painted, a very neat job resulted.

"Because the owner wanted his kitchen torn up during as short a time as possible we put four mechanics on the job, but again the labor cost proved too high for ready sale to Washington owners."

As a result of these three experiences with board materials and the expensive field labor, Mr. Klomparens began to think in earnest of some means of eliminating metal corners, the drilling and screwing of connectors to panels—and the Lock Joint resulted.



FIRST FLOOR PLAN



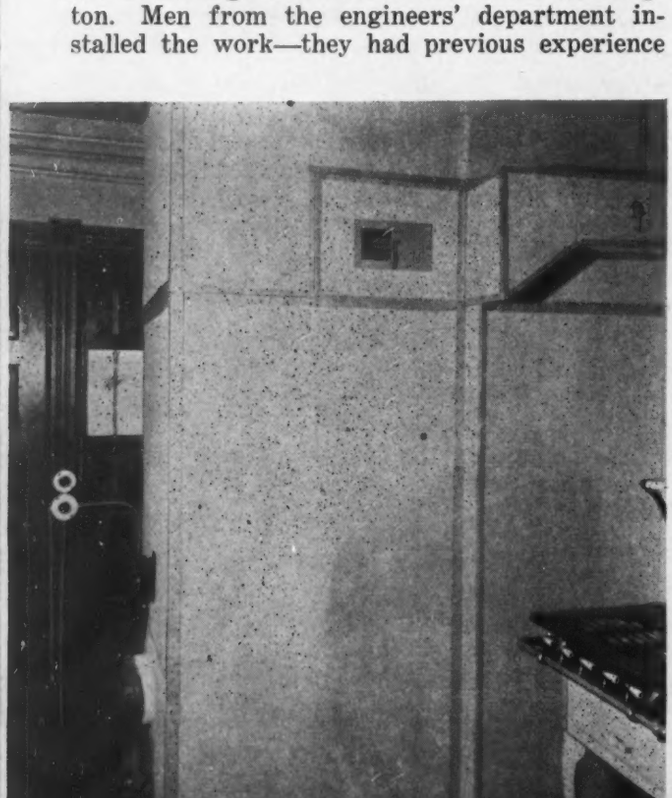
SECOND FLOOR PLAN

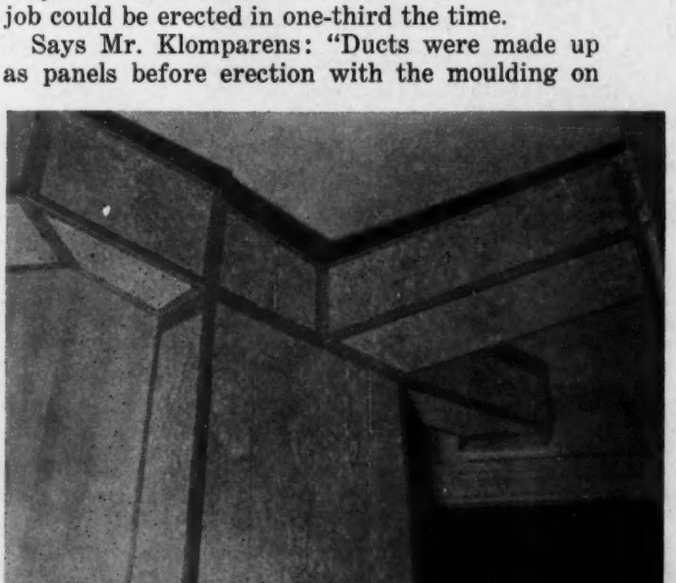
Finally—No Metal

Job Number 4 shows a Lock Joint installation which has been inspected by officials and declared "perfect." The installation is in the building of the U. S. Engineers Personnel at Fort Washington. Men from the engineers' department installed the work—they had previous experience with metal only and tried to make a hard job of putting the ducts together. As our foreman said: "You can't make a hard job of this," and eventually all the mechanics agreed.

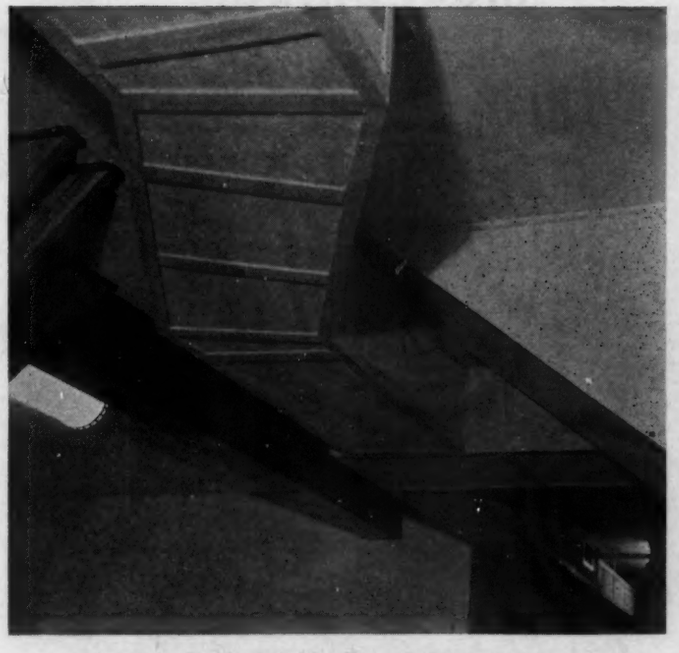
This was the first installation using Lock Joint and before the complete line of 45-degree, 15-degree, 90-degree wood mouldings were available. The engineers' men, therefore, had some minor difficulty and used some metal screws which now are not necessary, but the final result saved metal and met everyone's criticism. The installation required more labor time than would now be necessary—the men themselves believe that a second job could be erected in one-third the time.

Says Mr. Klomparens: "Ducts were made up as panels before erection with the moulding on





Two photographs and floor plans of Job No. 3 with furnace in kitchen, oil burner pitted 30 inches below the furnace, casing made of Flex Board and metal corners. Riser and ducts are Flex Board with 24-gauge corners and metal screws 4 inches apart. Neat job, said the owner, but too costly, said contractor.



Duct in Engineers Building showing 45-degree turn in main. All connectors are Klomparens Lock Joint of wood. Board panels are dowelled into corners. Engineers highly pleased.

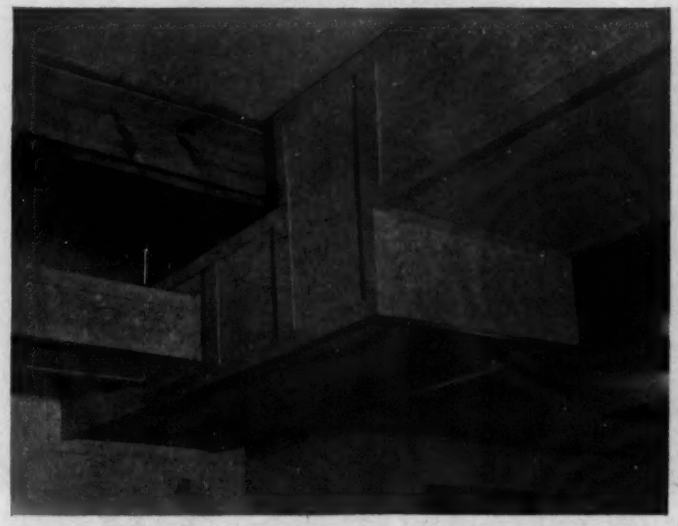
Ruggedness is gained by staggering vertical joints from horizontal joints. Hangers are now eliminated by screwing top moulding to ceiling.

the board. One photograph shows duct work without any screws. This was erected when the mechanics discovered that screws were not necessary and that when the moulding and panel were assembled it was impossible to pull the assembly apart.

"This same photograph shows that joints are staggered, a very good practice as it gives a duct which is rugged and stiff. The metal hangers shown in this picture were made from band iron from sheet metal bundles, but now the flat moulding is made with more stock so that screws can be run through the moulding into the ceiling eliminating all hangers.

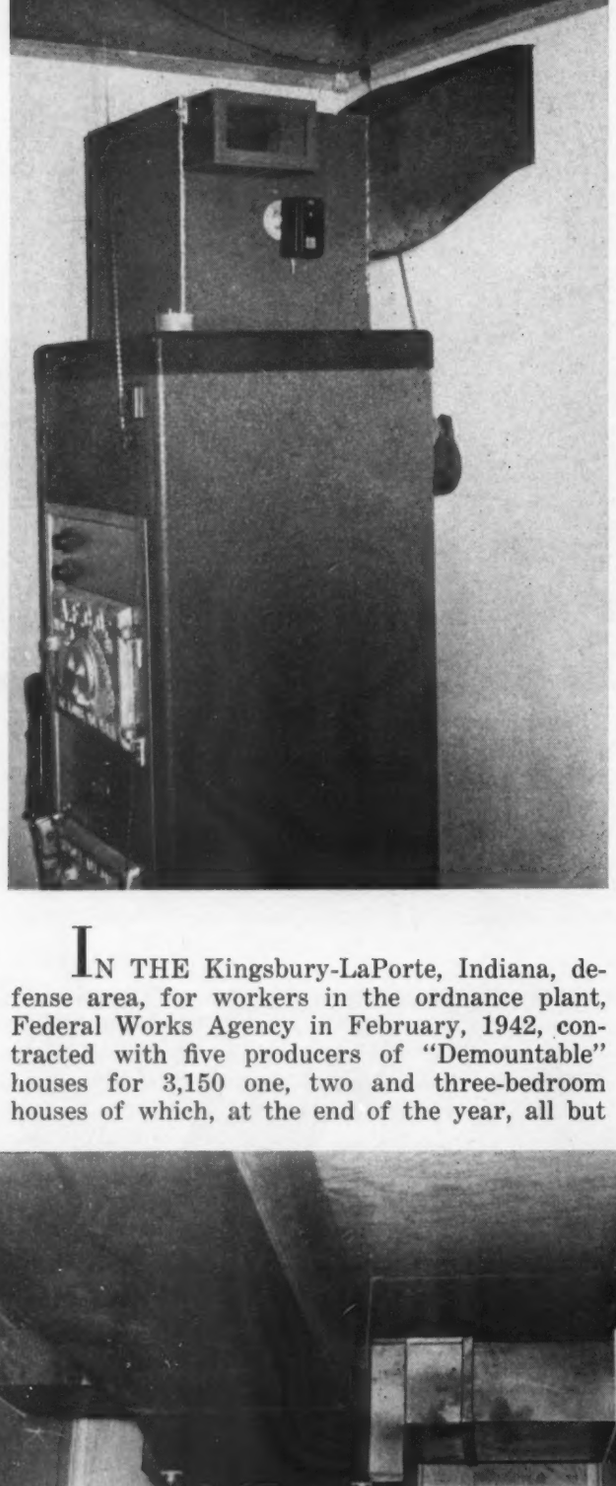
"Another photograph of this job shows only 45-degree turns in the duct run—this was requested by the engineers for easy air flow. Also there are no splitters in this job as the engineers did not consider splitters necessary. Interesting

(*Continued on page* 154)



Turns in "No Metal" ducts must be right angles, but construction is not difficult. Good air flow characteristics are maintained by using turning vanes.

This section of duct was connected to the casing of a red hot furnace. After 13¼ hours the ends of the moulding were charred but no other deterioration was shown. No-metal duct sustains weight of three young ladies after 6 months' exposure outdoors.

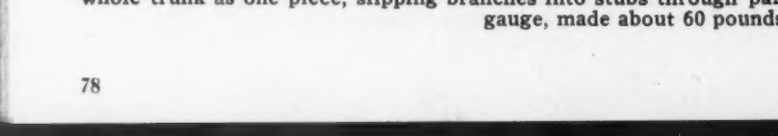


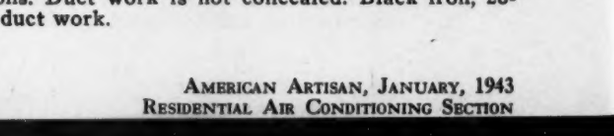
Mechanical Warm Air Heating in Demountable, Pre-fabricated War Worker Houses

IN THE Kingsbury-LaPorte, Indiana, defense area, for workers in the ordnance plant, Federal Works Agency in February, 1942, contracted with five producers of "Demountable" houses for 3,150 one, two and three-bedroom houses of which, at the end of the year, all but 225 were erected and equipped and will be ready for occupancy early this year.

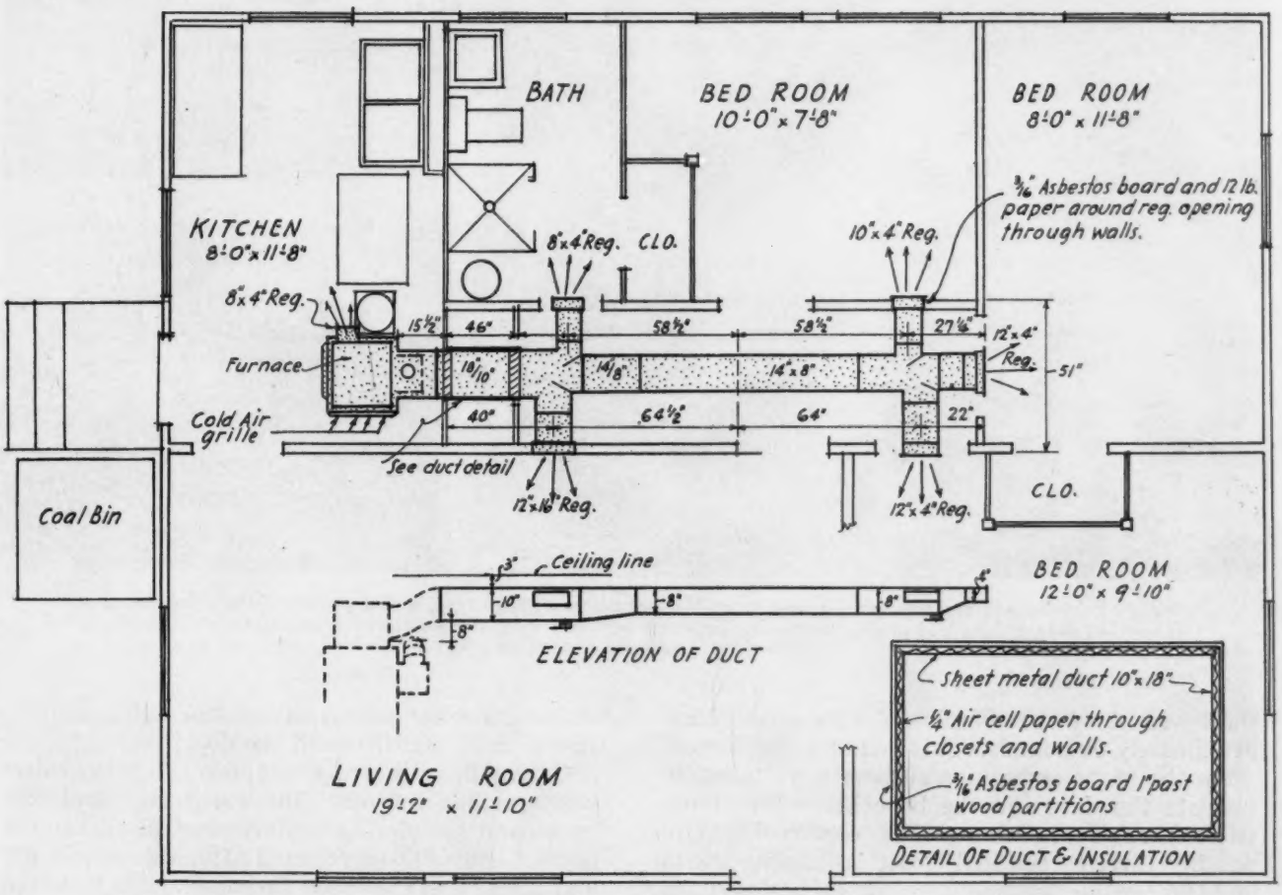
The five producers and the number of houses supplied by each were: National Homes Corporation, Lafayette, Ind. (1,200 houses); Libbey-Owens-Ford Glass Company, Toledo, Ohio (1,000 houses); Wilkinson Company, Indianapolis, Ind. (500 houses); Hussman-Ligonier Company, St. Louis, Mo. (250 houses); Northwest Wood Products Company, Wonewoc, Wis. (200 houses, temporarily delayed).

As the photographs of houses in progressive stages of construction show, all the houses were specified to conform with the PWA approved plans of the National Homes Corporation. Basically, these houses are erected on concrete, precast piles; floors are fabricated as panels in position and bolted together; exterior walls are also





Above is shown the coal-fired, upright furnace with straight plenum, trunk takeoff and kitchen register. Below—Two views of the straight-out trunk (see plan facing). Note the branch stubs, part of the main, which permitted erecting whole trunk as one piece, slipping branches into stubs through partitions. Duct work is not concealed. Black iron, 28-gauge, made about 60 pounds of duct work.



FLOOR PLAN

panels, either solid wall or cut for window or door frames (see photograph); inside partitions are thin panels; roofs are section—all units bolt together.

The house manufacturers, in turn, contracted site erection to Kuhne-Simmons Company of Rantoul, Ill.; K. H. Kettlehut of West Lafayette, Ind.; J. R. Price of Lafayette, Ind.; the rest of the prefabricators erected their own houses. These general contractors sub-contracted installation of the heating systems to Arthur W. Murray Company of Hoopeston, Ill., for Kuhne-Simmons; Rearick Brothers of Gary, Ind., for Price and Kettlehut; Normandy Sheet Metal Company of St. Louis for Hussman-Ligonier, and the Elliot Schultz Company for Northwest Wood Products Company and Wilkinson.

Of the total of 3,150 dwelling units, only the three bedroom houses (see plan) employed a central forced warm air furnace with a duct system for heating. There are between 500 and 600 of these forced warm air furnaces in the project.

Heating System Layout

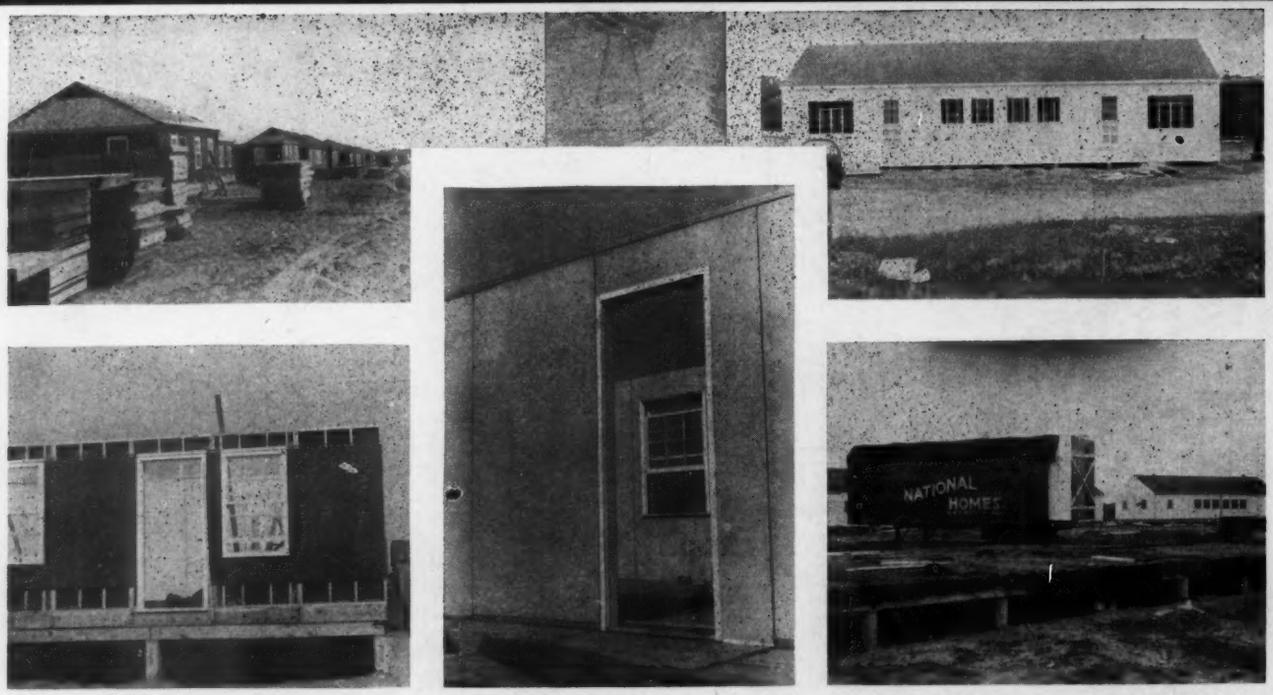
Basically, all these forced warm air systems, including the distributing duct work, followed the plan shown. The furnace is placed in the inside center corner of the kitchen with a square plenum built up to within a few inches of the ceiling. The warm air register for the kitchen is placed in a stub on one face of the plenum; the other rooms are heated from the single main duct which is carried through the hall as shown. This main duct will not be concealed but will be painted and left exposed.

Design of the duct system is simplified as much as possible so that there are no intricate fittings and a minimum of material. This simplification also permitted easy erection—the plenum and the heater room ducts were assembled as two units (plenum and duct) with the plenum erected first; then the duct was run from the partition to the plenum and connected.

Simplification of Ducts

The section of main duct which passes through the hall closet and the heater room partition was made as one piece up to the point beyond where the bath and living room branches are taken off. One of the photographs shows this section clearly. Note on the photograph that the two branches have stubs integral with the main so that in erecting the register branch section could be pushed through the partition and cleated to the stub on the main working in the clear. As the plan and photographs show, this method was employed at all branches so that the main through the hall could be erected as a unit and the branches quickly connected.

Duct material being 28-gauge black iron, the



Most of the houses are two family, end to end. Floors are sections, walls and partitions are panels, roof is sectional—sections and panels were fabricated in builders' shops and delivered ready to erect and bolt together.

total weight of the complete duct system is approximately 60 pounds. This includes the plenum.

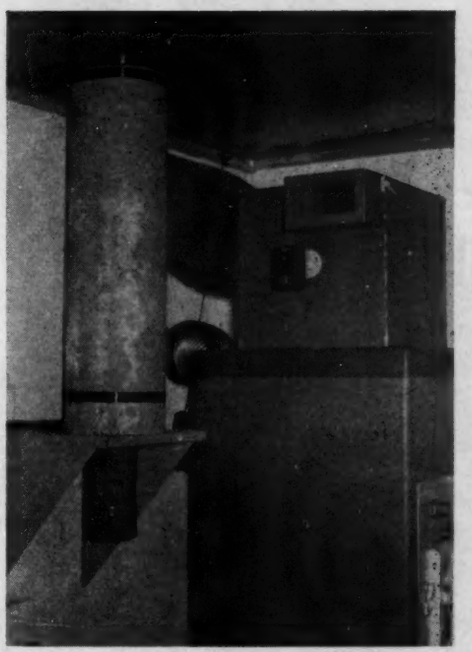
As the plans show, precautions were taken to insulate the duct and the branches where these pass through partitions. The section of main passing through the hall closet is insulated with one layer of air cell and 3/16-inch asbestos board as detailed in Section A-A. This wrapping would, of course, stop most of any heat loss from the main into the closet, but the necessity from a fire hazard standpoint may be questioned. Where each branch passes through the partition, the wrapping consists of one layer of 3/16-inch asbestos board and one layer of 12-pound asbestos paper. This insulation should stop any possible conduction to the partition.

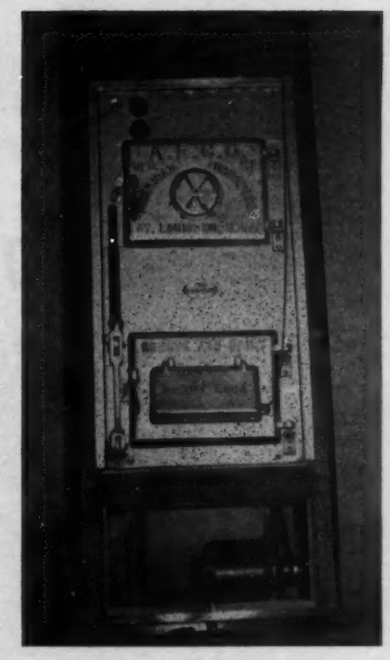
No closed return system is employed—instead, the furnace casing is open on one side so that air from the kitchen satisfies the blower. The kitchen, in turn, must move air from the living room—just around the corner of the door.

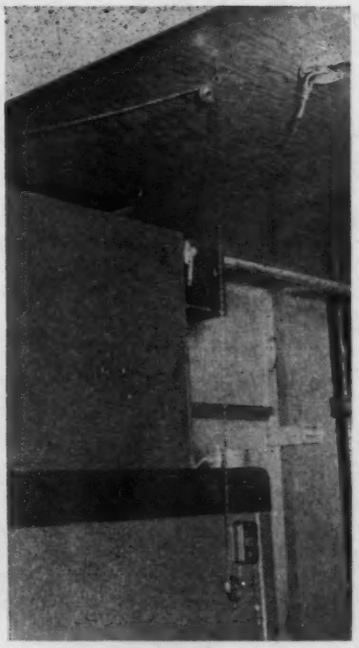
Originally all heating equipment in this project was specified for oil. This was for central furnaces and circulating heaters used in all smaller houses. But oil was rejected after the project got under way and coal-fired furnaces and circulating heaters are installed. Hot water supply was to be oil-fired, and this also was changed to coal.

So far as installation of equipment and duct work is concerned, this change did not matter, but the change did affect the chimneys. To reduce expensive masonry labor, to provide better draft, and to increase ease and rapidity of erection, all chimneys in this project, whether on furnaces or on circulating heaters, are 5, 7 and 8-inch diameter porcelain enamel pipe, the majority of which is manufactured by the Condensation Engineering Corporation, Chicago.

Sections of Vitroliner porcelain enameled pipe at the job shop and mechanic bolting top section with rain cap on the insulated chimney pipe. The details opposite show construction of the chimneys and vents and methods of support and insulation.



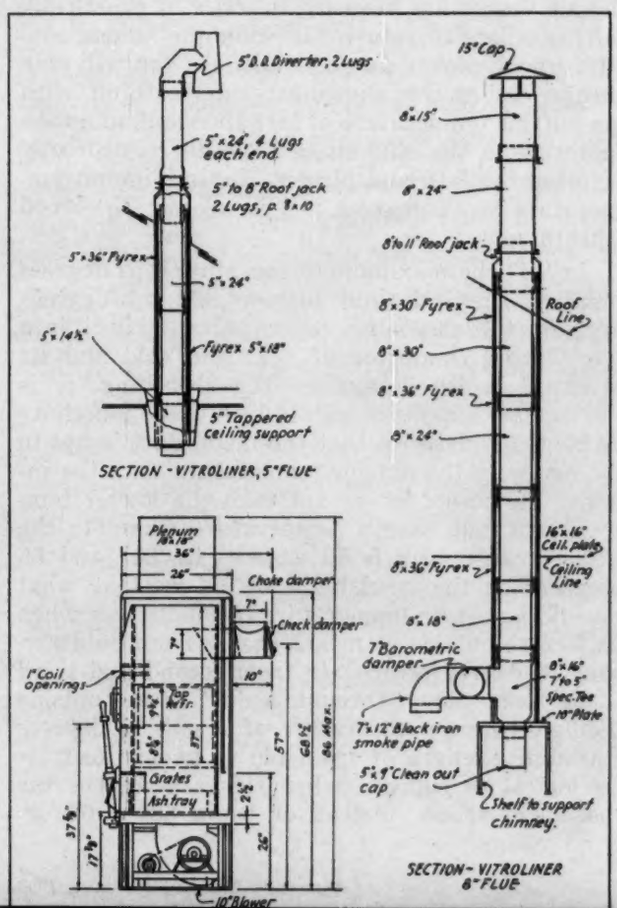




Left—Fyrex (Grant Wilson, Inc.) insulation tube on the chimney shelf and draft adjuster behind casing. Center—Blower below combustion chamber in the AFCO furnace. Right—Draft door and check are operated by chains working from a dial which is set to maintain a pre-selected combustion rate.

As the photographs show, the smoke pipe does not go straight up from the furnace but does rise straight up from a support shelf alongside the furnace. This permits incorporation of a clean-out trap at the base of the Vitroliner chimney. The "Vitroliner" is insulated with pre-formed asbestos tubes (Grant Wilson, Inc.), one inch thick, from the supporting base (see photograph) to a point a few inches above the roof. In the photograph of a mechanic bolting on the top section and rain cap the insulation level shows as the thick base. At the roof line a flange is welded to the outside shell so that all possibility of leaks are engineered out. A detail shows the construction of this chimney.

The patented Vitroliner roof jack (see detail) includes a slip joint which provides for vertical expansion caused by the pipe heating up from combustion and eliminates any lifting of the flashing plates should the pipe lengthen from expansion. This roof jack can be erected when the house is roofed and the chimney below can then be installed later from inside the house.



Flue Installation

When oil was specified for the furnaces and the water heaters, it was proposed to tap the water heater vent into the 8-inch main chimney pipe, but when water heaters were changed to coal this was altered to use a separate insulated 5-inch vent pipe (same material and construction) for the water heater. On two-bedroom houses a 7-inch main vent was originally specified, but when the fuel change was made, Condensation Engineering Company had 8-inch pipe on the job so 8-inch pipe was installed instead of the 7-inch and this extra area permitted the water heaters in two-bedroom units to be tapped into the main 8-inch flue.

On the separate 5-inch water heater vents, the rain cap is not used. Instead, a down draft diverter as shown in a sketch is used. This is possible because the main flue clears the ridge of the roof by 24 inches, whereas the water heater vent clears the roof (not the ridge) by 24 inches, and so may be below the ridge. To prevent any down-draft, the diverter shown was used.

Perhaps of interest, the gutters on these houses are wood but the downspouts are galvanized iron. The tubes are metal. The carpenters hung the

(*Continued on page* 150)

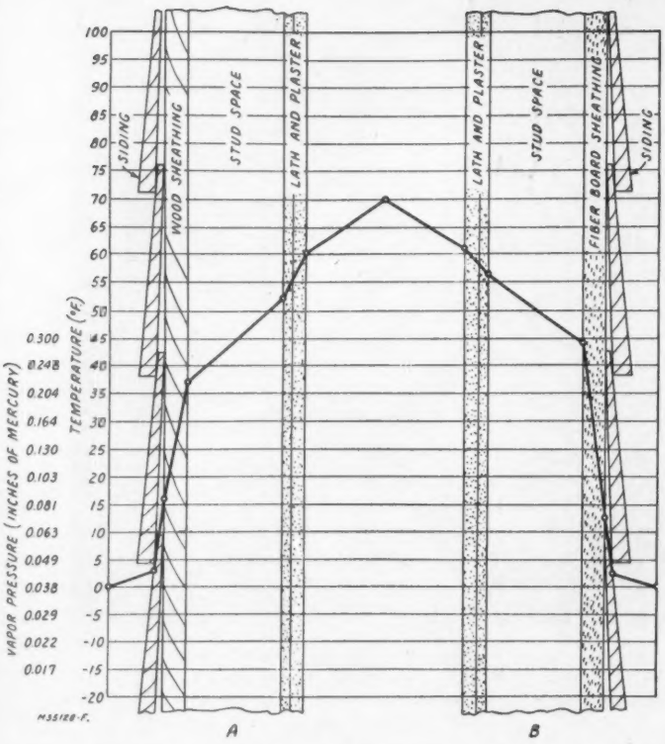


FIG. 3. SECTION OF CONVENTIONAL FRAME WALL, SHOWING TEMPERATURE GRADIENT WITH WOOD SHEATHING (A) AND WITH ¾-IN. FIBRE BOARD SHEATHING (B)

Cut Off Second Floor Returns and Save Fuel

By William Ayers

The problem facing home owners—especially owners burning oil—is to get the maximum amount of heat from the minimum amount of fuel. Our industry is cooperating by telling owners how to save fuel by adding insulation, storm sash, operating at reduced temperatures, etc. But there are other fuel saving ideas, one being the suggestion in this article raising return air temperatures by cutting off cold second floor returns, thereby decreasing the temperature difference the furnace must overcome.

◆

AMONG the ideas which experience has shown reduce fuel consumption, one idea, to the author's knowledge, has not been proposed. This method centers around ways and means of reducing the number of degrees the return air must be raised to bring supply air up to operating register temperature. The simplest way to reduce this temperature difference is to cut off second floor returns where these returns are in cold outside walls. What has to be proved to substantiate this thesis is that return air from second floors is colder than the 65 degrees usually calculated in setting up an operating temperature difference.

(Editor's note—Mr. Ayers assumes that return air from second floors is as cold as his test data indicate. However, our opinion is that the final answer must take into account the temperature of the mixture which results from mixing second floor air with first floor air which may be warmer than the 65 degrees calculated. Nonetheless, Mr. Ayers' personal experience indicates that cutting off second floors frequently benefits operation, so we leave to readers the decision and present his proof.)

Stud Space Temperatures

To determine just what temperature is obtained in return air from a second floor, we can turn to certain tests which seem to establish necessary data; these data may not always correspond with actual conditions in a given job, but, in general, the data have been pretty well established.

Turning to Figure 3, page 111, of University of Illinois Bulletin No. 76, "Papers Presented at the Second Conference on Air Conditioning," held at the University of Illinois, March 8 and 9, 1939, this figure shows two types of outside walls down which a return duct can be taken. We must admit that it has been the practice of practically all installers to return air from the second and third floors down outside walls. As you will note in the "A" section showing wood sheathing, with an outside temperature of zero the maximum temperature in the stud space is 53 degrees directly against the lath and plaster. The minimum temperature is 37 degrees and is against the wood sheathing.

In "B" the maximum temperature is 57 degrees against the lath and plaster and 44 degrees against the sheathing. Since a metal duct is a very rapid conductor of heat and cold and its greatest width is against the sheathing, it is logical to expect a great deal of conductivity around its girth, so that the metal duct is apt to be closer to the outside temperature than the inside. However, let us not take the lowest temperature, but take a temperature closer to the inner wall, which is 52 degrees in "A" and 56 degrees on the insulated wall. If we take what should be a fair temperature of 50 degrees when it is zero outside, it means that we can be drawing 70 degree return air from second and third floor rooms down through a duct in the outside wall having a temperature of about 50 degrees through a length of from ten to twenty feet. It is logical to suppose when this air reaches the basement trunk, instead of being 68 or 66 de-

MERCOID

The Only 100% Mercury Switch Equipped Controls

The Mercoid line of automatic controls are the results of over two decades of wide experience in the engineering and manufacture of automatic controls ★ Realizing the responsible duties imposed in the functioning of automatic controls, the Mercoid organization deems it imperative that nothing be spared in material quality, workmanship, or time in perfecting every detail of design and construction that will add to a better and more reliable operating instrument ★ Thus, from the very beginning, Mercoid Automatic Controls have employed the now famous hermetically sealed Mercoid Switches. These mercury contact switches are designed to give an operating result not obtainable in the open contact types ★ The "making" and "breaking" of an electrical circuit in a control should be as near trouble-free as possible. Mercoid Mercury Switches are the best answer to the problem. Long years of service under various conditions prove this ★ The mercury switches manufactured by The Mercoid Corporation are all of special design, made under the most exacting conditions to meet the rigid specifications required. They are known the world over as "Mercoid Switches." The trade mark "Mercoid" is registered in the United States Patent Office ★ The advantages of Mercoid Switches are many. They cannot be affected by dust, dirt or corrosion; nor are they subject to open arcing or pitting and sticking of the contacts. Many of them are used on applications involving millions of operations where they give a highly satisfactory performance. The exclusive use of these switches is one of the distinguishing features of Mercoid Controls ★ Apart from the importance of the Mercoid Hermetically Sealed Mercury Switch, there are a number of other outstanding characteristics in the design, construction, and operation of Mercoid Controls which are adequately covered in the new Mercoid catalog Number 600—a copy will be sent upon request.

THE MERCOID CORPORATION ★ 4209 BELMONT AVENUE ★ CHICAGO, ILLINOIS

IT PAYS TO GET THE BEST

NOT ON YOUR LIFE! At PREMIER it's win the war first — then we'll talk about business as usual."

We have converted as much of our plant as possible to the production of material for our fighting forces, and we will gladly turn our entire plant over to the Army and Navy any time they want it.

During the past year we have been able to supply PREMIER dealers with a limited quantity of heating equipment and repairs. We hope to continue on the same basis in 1943, for there is certain to be a demand for essential furnace replacements and repairs which will be approved by the WPB.

As we see it, there are still enough of these essential repair and replacement sales in your territory to keep you in business for the duration. And — whenever you have need for a furnace or parts, call on PREMIER. We may be able to serve you.

PREMIER FURNACE CO.
DOWAGIAC, MICHIGAN

★

BUY UNITED STATES WAR BONDS AND STAMPS

grees, as we usually figure it, it is nearer to 50 degrees.

In the usual two-story home, due to the second floor ceiling exposure, the heat loss on the second floor is greater than the heat loss on the first floor. The ducts supplying air are longer and the total duct area and volume of air delivered is usually three-fifths of the total supply or return area for the house. This means that over 50 per cent of the air being returned to the furnace comes back with a return temperature of 50 degrees or lower. It is also true that a forced air heating system's average operating time during a season is one-third of the time; this leaves two-thirds of the total heating system hours with the blower not operating. Due to the loss of temperature of the return air from the second and third floors, making the air in these ducts heavy and setting up a reverse flue action, these returns usually work 100 per cent of the time. Putting this another way, if the total amount of air returned to the furnace in a home is 2,500 cubic feet per minute and the blower operates for one minute, we have 1,000 cubic feet at a temperature of 68 degrees returned from the first floor and 1,500 cubic feet with a temperature of 50 degrees returned from the second floor. However, on the ratio of the system being on one-third of the time and off two-thirds of the time, we have the next two minutes that the second floor returns were circulating 50 degree air either into the furnace or out of the first floor returns, giving a total of 4,500 cubic feet at 50 degrees as against 1,000 cubic feet at 68 degrees.

About this time the reader likely is saying, "That is fine in theory but it doesn't actually happen in practice." The author has spent the last year and one-half entirely in correcting installations, none of them having been in more than three years and most of them in only a year. In a great majority of the cases readings show sec-

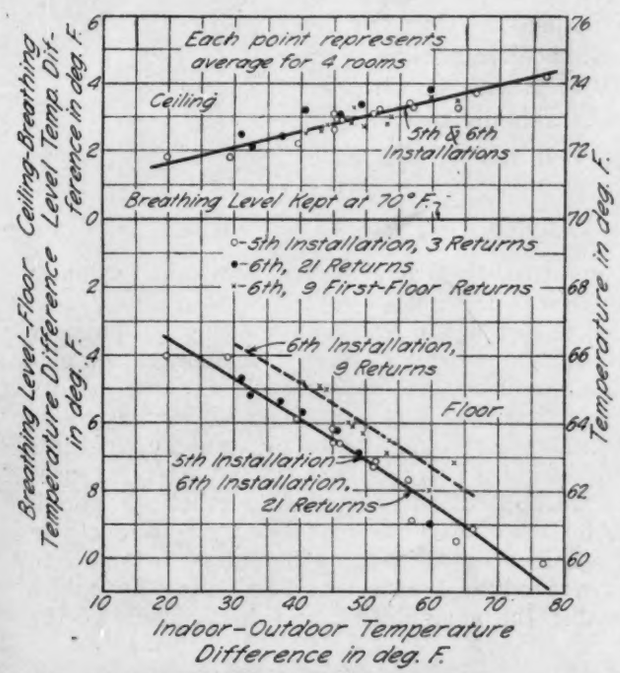

Each point represents average for 4 rooms
Ceiling
5th & 6th Installations
Breathing Level Kept at 70° F.
-5th Installation, 3 Returns
-6th, 21 Returns
-6th, 9 First-Floor Returns
6th Installation, 9 Returns
Floor
5th Installation
6th Installation, 21 Returns
Ceiling-Breathing Level Temp. Difference in deg. F.
Breathing Level-Floor Temperature Difference in deg. F.
Temperature in deg. F.
Indoor-Outdoor Temperature Difference in deg. F.

Fig. 227. Floor, Breathing Level, and Ceiling

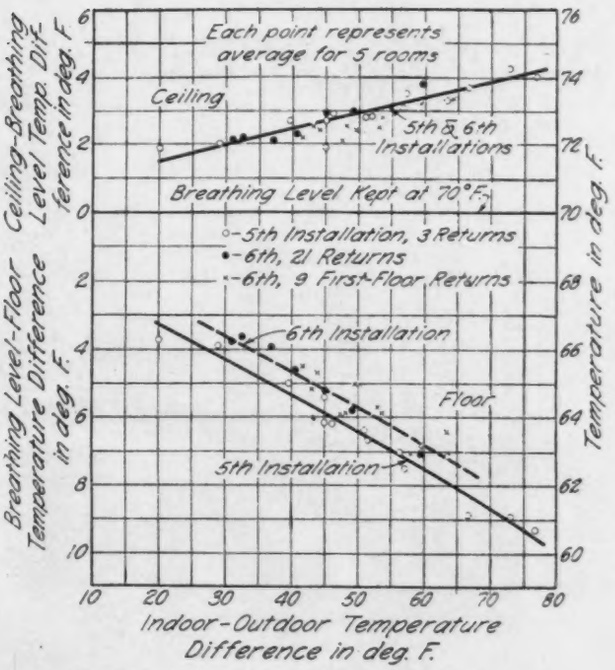

Each point represents average for 5 rooms
Ceiling
5th & 6th Installations
Breathing Level Kept at 70° F.
-5th Installation, 3 Returns
-6th, 21 Returns
-6th, 9 First-Floor Returns
6th Installation
Floor
5th Installation
Ceiling-Breathing Level Temp. Difference in deg. F.
Breathing Level-Floor Temperature Difference in deg. F.
Temperature in deg. F.
Indoor-Outdoor Temperature Difference in deg. F.

Fig. 228. Floor, Breathing Level, and Ceiling Temperatures for Upstairs Rooms, Fifth and Sixth Installations

ond floor returns down the outside walls return 50-degree air to the furnace even with temperatures as high as 30 degrees outside, and examples have been found where return temperatures are as low as 30 degrees in zero weather.

To substantiate further this contention, most contractors can call to mind systems where the thermostat first calls for heat, raises the bonnet temperature high enough to start the fan, which starts drawing in the accumulation of excessively low temperature air in the ducts, dragging the bonnet temperature down to shut off the fan almost immediately until the furnace catches up. In some cases this cycling goes on five to ten times before the blower will finally stay on.

Reducing Load on Furnace

Another common example of how rapidly a duct will cool off in the job with a supply stack in the wall between the garage and the house will show that although the duct has been warmed up enough when the burner has been on to supply warm air into the room, it does not take long after the blower has shut off for the air in that warm air lead to chill enough to start a reverse action, drawing the room air back down into the furnace.

Cutting off the returns from second floor rooms will not cause any more or less flow of air down the stairway, as the noticeable flow of air down a stairway from the second floor is due to an entirely different condition. However, it will take quite a load off the furnace and fuel supply. In one particular residence in which the owners could not bring the temperature up to 70 degrees in sub-zero weather, shutting off the returns from the second floor raised the temperature within an hour to the thermostat setting. However, upon opening the second floor return again the tem-

(*Continued on page* 145)

One 7500 cfm evaporative unit, mounted on the roof as shown, keeps patrons of **Hopkins Tavern**, Evansville, Ind., and the owner's living quarters in the rear comfortable in the sultriest Ohio Valley summer day.

Evaporative Cooling Is a Post War Possibility Worth Planning For Now

By H. F. Sanderson
Secretary-Manager, J. A. Brucken Co., Inc., Evansville, Ind.

Production of evaporative coolers has been stopped by several regulations. But there is nothing to stop the live dealer from making plans to sell evaporative cooling in the huge remodeling, reconstruction and new construction activity our post-war planners so confidently predict. The basis for such plans, we believe, are aptly set forth in this article.

SUCCESSFUL dealers in all lines constantly search for items to sell affording fair profit plus satisfied customers, with a minimum of service trouble. Occasionally there appears something, simple in its application, yet offering opportunity, apparently heretofore unseen in its field. Such an item, in our opinion, is Evaporative Cooling.

This field has hardly been scratched, yet in a few states thousands of Evaporative Coolers have been sold in the past few years, many of them crude and poorly engineered, yet they offer such a change for the better from the ordinary fan systems that they have given complete customer satisfaction.

The increase in evaporative coolers' popularity resulted in today's leading evaporative cooler manufacturers presenting coolers whose beauty are an example of engineering and designing plus humidity control and other advantageous features not included in early models. A variety of sizes afford application to various installations, standard sizes enable the prefabrication of ducts in stock lengths which may be cut or extended to give speedy installation, and common sense tables enable the computation and installation of the

Jerry's Food Shop maintains a comfortable atmosphere and also keeps vegetables fresh and salable with one 10,000 cfm unit distributing through one side outlet.

proper size unit or units for a given condition.

The ease with which most installations can be made adds to the pleasure of the completion of the sale. Our experience has proved that each customer is a booster and usually a source for additional sales. Sales and service helps from the manufacturer aids the inexperienced dealer in quickly grasping the sales and installation procedure.

Air conditioning has long been something everyone desires, yet thinks of in terms of large expenditures and expensive operating costs, with the result it appears out of reach of the majority. Evaporative cooling has removed the resistance of high costs and offers to condition the air in most any establishment at a fraction of the initial cost as well as at a very low operating cost as compared to refrigerated methods. The question of whether or not evaporative cooling is air conditioning is pretty well answered in the definition of a leading university, which defined air conditioning as follows: "Cooling, humidifying, cleaning, circulating the air and introducing some outside fresh air."

Evaporative cooling certainly cools the air as it passes through the evaporating water; it humidifies and cleans the air as it passes through the moist filter pads. The powerful blowers circulate the fresh air which is brought in from the outside in sufficient quantity to entirely replace all air in the area every one to three minutes, depending upon the type of establishment and installation. This form of cooling increases evaporation on the skin of the people, resulting in body heat loss and lowers effective temperature. Its success is based on the replacement of stale, used air with fresh, cool air. Thus it requires outlets and permits doors to remain open while refrigerated systems close up doors and use a great deal of the air over and over.

Humidity Can Be Controlled

Occasionally an objection to evaporative cooling arises, usually based upon hearsay, on reports of uncomfortable humidity in certain areas. Humidity is one of the problems which confront us, yet with present humidity controls and proper outlets, this is not the problem it seems. We usually overcome this objection by actually visiting a user of evaporative cooling and letting the prospect see and hear for himself. A fitting example of the overcoming of humidity objection is our large list of users in this humid Ohio valley area.

The simplicity and common sense application of evaporative cooling to different establishments, plus its moderate initial cost and low operating

The Woods Drug Store has a high heat gain from cooking and customers, but two 7500 cfm units distributing air from the special fixtures shown in the foreground elicited the enthusiastic praise set out in this article.

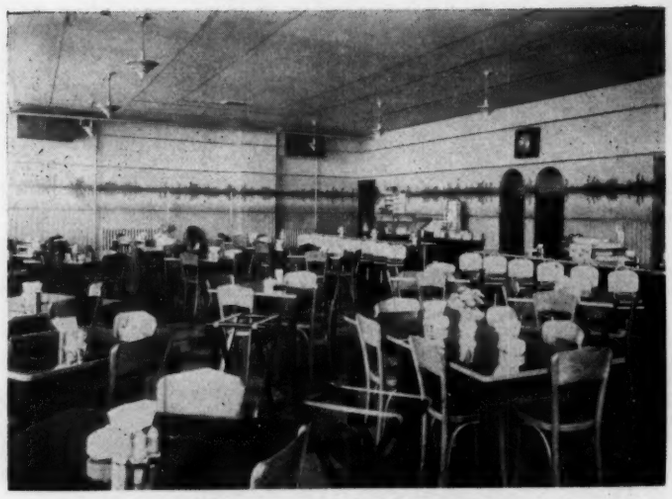
cost, makes it "a natural" for the dealer who is looking for a really salable item. Evidence of this is our own experience.

Less than two years ago we knew nothing of evaporative cooling. We stumbled upon it in an effort to help out one of our food service equipment customers in cooling an extremely hot cafe. Our installation of a small 2500 cu. ft. unit resulted in several sales for us within a week and during the first season our sales were 69 units in a 69-day period. To date we have sold close to 200 units in the two seasons and perhaps would have sold twice this amount had their manufacture not been curtailed due to the war effort. Our distribution was in a relatively small area in Illinois, Kentucky and Indiana. We know that there has been more friends made for us in the sale of evaporative cooling than on any other item. In addition the profits have been very gratifying.

Inventory and Financing Are Easy

The dealer who expects to succeed with the sale of evaporative cooling will find it profitable to have several units on hand at all times. Some installations require two or more small units, while others are best handled with one large unit. Usually the purchaser makes up his mind quickly when he learns how easy it is to have the comforts of evaporative cooling, and he wants it right now. Recently we made a $1590.00 sale on Saturday afternoon in a town fifty miles from Evansville and by 7 P. M. that Sunday the installation was completed and the customer happy.

Dealers who lack the capital to carry stocks will find banks and finance companies eager to handle finance on a floor plan basis similar to that used by automobile dealers. They will usually advance 90% of the cost of the units, with payment by the dealer when sold or a 10% curtailment every 90 days. Our sales have been 65% for cash or on short terms; however, we have had no difficulty in financing others over as long as 36 months with no down payment and no recourse, F. H. A. Repossessions have numbered



Mrs. Stephens Cafe in Vincennes, seating 100 guests, is cooled with two 7500 cfm units mounted on the roof and introducing air through the two end wall deflecting grilles shown.

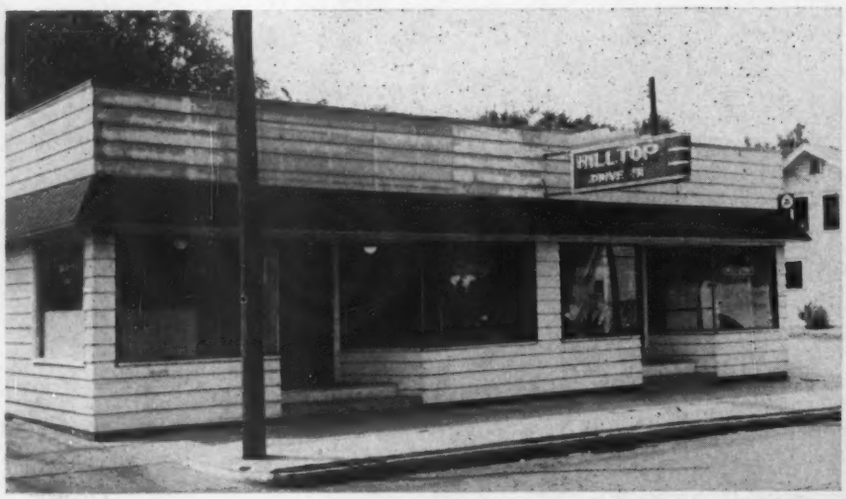
one, and this was a bankruptcy involving a small unit. Installment payments have an unusual record for promptness and we are told by many users that the added business paid many times over the cost of the cooling system.

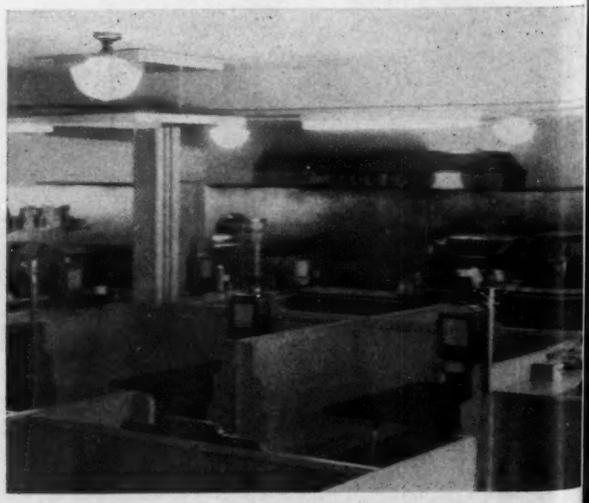
There are several manufacturers of evaporative cooling units. Each of these issues literature which contains much valuable information both on sales and installation of their systems. Easy charts are furnished for computing the size unit to use and different methods of installation are described. Careful study of these, plus common sense application to the installation, make it easy to have satisfied customers.

Be Sure You Pick a Reputable Manufacturer

One of the important factors in merchandising evaporative cooling is to select a manufacturer whose reputation and standing is such that the units you sell will continue in operation over a period of years with a minimum of upkeep and service expense. Most of the systems are simple in their mechanical construction, yet if improper-

(*Continued on page* 152)





Hilltop Tavern is cooled with one 7500 cfm unit mounted on the roof. Air is introduced through the baffled opening shown. From this one opening even distribution is obtained. Air is forced out through the front and the kitchen doors.

PEERLESS

Is Cooperating for Victory

The first order of business at PEERLESS these days is cooperation with our government in the all-important job of winning the war. Second only to this is our desire—and determination—to cooperate with PEERLESS dealers to the fullest extent permitted by the emergency conditions under which we must all work.

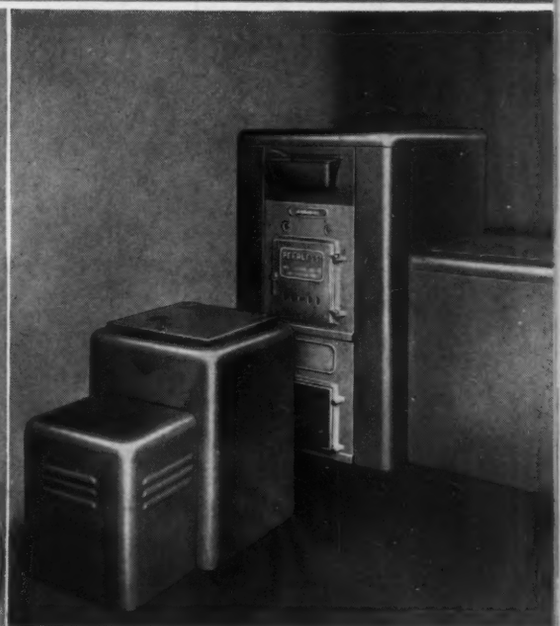
War-time production restrictions impose new responsibilities upon furnace manufacturers and dealers alike. With the production and sale of new equipment limited to orders carrying priorities, the servicing and maintenance of furnaces now in service becomes a major problem for us—and for you. Because of the critical fuel situation, it is more than ever important that furnaces be kept in A-1 working condition. Fortunately for PEERLESS dealers, PEERLESS has always given special attention to repair service, and maintained a large stock of parts. In this emergency, therefore, PEERLESS dealers are assured of a dependable source of parts for repair service.

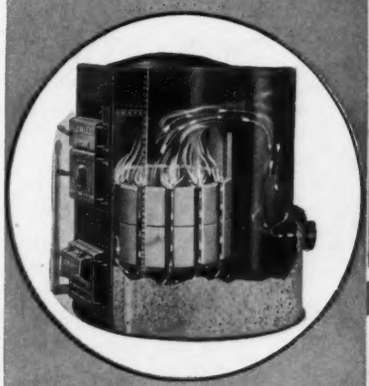
REPAIR PARTS

For All Makes and Models

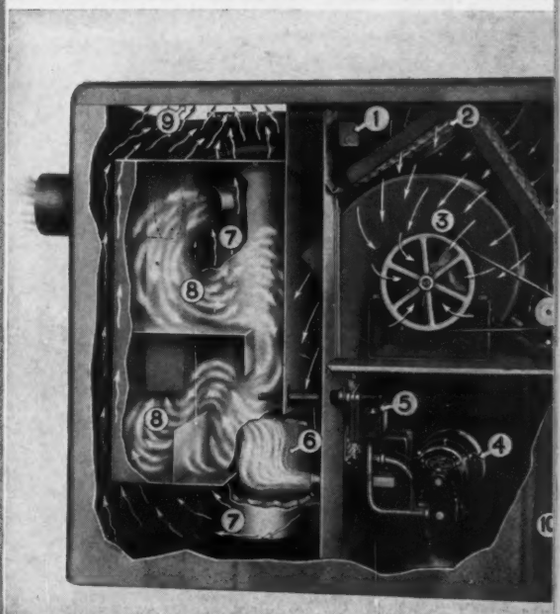
The PEERLESS repair stock includes parts not only for PEERLESS furnaces, but for all makes and models of warm air heating plants. You may not be able to sell many new furnaces in 1943—but you can continue to go after repair business. By taking care of this maintenance business during the emergency, you will be in line for the new furnace business after the war.

Latest design PEERLESS *Streamliner* steel furnace, complete with large, silent blower, filters, automatic humidifier. Truly a DeLuxe unit at a remarkably low price. Beautiful baked enamel finish.





Here is another exceedingly popular unit in the complete PEERLESS line. PEERLESS round type furnaces—in either steel or cast iron—are designed and built to give dependable, economical service for a long period of time.



PEERLESS MASTER Automatic Furnace for small and medium size homes. Note the compact simplified arrangement of all the component parts and the intricate maze of baffling in the big radiator that delays passage of flue gas to chimney.

PEERLESS FOUNDRY COMPANY

INDIANAPOLIS, INDIANA, U. S. A. • *Pioneers in warm air heating for over a third of a century*

"Now we're helping put the *Heat* on the Axis!"

Only yesterday, it seems, Payne was equipping thousands of American homes with gas furnaces—the finest that engineering leadership, modern facilities and precision methods could produce. Then—*war.* ★ Payne was granted early opportunities to serve. Back in 1940, we began deliveries to U. S. military bases; and soon, 47 camps and cantonments, Coast to Coast, were Payne-heated. Next—rapid conversion of our plant. ★ Today, our engineers pore over strange blueprints. Our shops hum day and night with a new activity. Our skilled workers are backing their brothers at the front (already the Payne employes' service flag is studded with stars)—and helping to equip Democracy's legions throughout the world—by all-out war production. ★ Meanwhile, our Research Laboratory is perfecting even better Payne furnaces for the gas industry's unlimited future. But their manufacture must wait. You know, and we know, there's only one job now that *really* matters.

YESTERDAY—
Payneheat for the homes of America.

TODAY—
Precision parts for the arms of Democracy.

TOMORROW—
Still finer furnaces for the gas industry's post-war expansion.

PAYNEHEAT

Simplified—*but better*—Gravity Systems

This is the first of several articles reprinted from University of Illinois, Engineering Experiment Station Bulletin No. 45. The new simplified gravity system proposes seven changes from the Standard Gravity Code—(1) leader pipe size in Btu, not sq. in.; (2) a unit piping system; (3) consideration of long leaders plus several elbows; (4) fewer pipe pieces; (5) furnace rated in Btu delivery at the register; (6) five good return systems; (7) 16, not 100, return air grille sizes.

UNDERLYING Principles of the Standard Gravity Code.—The Standard Gravity Code for the design and installation of gravity warm-air heating systems was adopted in October, 1922, and introduced the first rational procedure for the design of gravity warm-air heating systems. The basic figures in the Code were derived from extensive tests made in the Mechanical Engineering Laboratory at the University of Illinois in connection with a cooperative research project sponsored by the National Warm-Air Heating and Air Conditioning Association.

The design procedure prescribed in the Code may be briefly summarized as follows:

(a) The heat loss from the rooms to be heated is expressed in terms of the square inches of warm-air leader pipe required. Based on a register air temperature of 175 deg. F., the warm-air carrying capacities of leader pipes to the first, second, and third stories are given as 111, 167, and 200 B.t.u. per hour per square inch of cross-sectional area of the leader pipe, respectively.

(b) The required area of each warm-air stack leading to second and third story registers is specified to be not less than 70 per cent of the calculated area of the connected warm-air leader pipe.

(c) The free areas of the warm-air registers must be equal to the calculated areas of the connected warm-air leader pipes.

(d) The furnace capacities are stated in terms of square inches of leader area on the basis that each square inch of cross-sectional area is equivalent to an average carrying capacity of 136 B.t.u. per hour. For buildings more than one story in height, in which all stories are to be heated, the furnace to be used is limited to one having a rating at least equal to the sum of the cross-sectional areas of the leader pipes to all of the rooms. For buildings in which the rooms to be heated are all on one story, the sum of the required leader pipe areas for all the rooms is multiplied by a correction factor depending upon which story is to be heated, and the corrected sum of leader pipe areas is specified as a basis for selecting the furnace.

(e) In the case of recirculation, or where all of the air is taken from within a building, the return-air duct must have a net cross-sectional area throughout its entire length of not less than the combined calculated cross-sectional area of all warm-air leader pipes connected to the furnace.

The Standard Code introduces the term *square inches of leader pipe* as a physical unit, to be used instead of the equivalent heat delivery at the register faces, or carrying capacity, expressed in B.t.u. per hour. The heat deliveries of stacks, registers, furnace, and return ducts are all expressed in terms of this physical unit, on the basis that it can be more readily visualized by the heating contractor than ratings stated in terms of the fundamental unit of *B.t.u. per hour.*

2. *Limitations of the Standard Gravity Code.*—Gravity warm-air furnace systems installed in accordance with the Standard Code have, in general, given very satisfactory results. However, in the course of the years since it was first introduced, some limitations of the Code have become apparent. In addition, the more recent development of forced warm-air heating systems has tended to divert the attention of the heating contractor from the gravity furnace, and a newer group of heating contractors have entered the industry without having studied and applied the Standard Code. Hence, the purpose of this circular is to analyze the results presented in previous bulletins of the Engineering Experiment Station, to present a proposed method for eliminating some of the limitations and misapplications of the existing Standard Code, and to simplify the procedure.

The limitations of the Standard Code and proposed methods for correcting them are as follows:

(a) In engineering practice, by generally accepted methods, the heat losses from rooms are calculated in terms of *B.t.u. per hour,* and not in terms of square inches of leader pipe. In forced warm-air heating practice the heat losses are practically always calculated in terms of B.t.u. per hour. Under the existing conditions, a heating contractor who finds it necessary to design both a gravity warm-air system and a forced warm-air system for the same structure is required to calculate the heat losses by two different methods involving two different units. In the

analysis presented in this circular the warm-air carrying capacities and the service capacities of return-air ducts have been expressed entirely in terms of B.t.u. per hour.

(b) The emphasis placed upon the carrying capacity of each square inch of leader pipe has tended to obscure the equally important fact that full capacities of the leader pipe will not be obtained unless the boot, stack, stackhead, and registers also have adequate areas. In many installations adequately sized leader pipes have been attached to inadequately sized stacks and fittings, with the result that the expected plant performance has not been obtained. In fact a large number of boot fittings that do not give the proper combinations of leader pipe and stack are listed in commercial catalogues. Where the combinations of leader pipes, boots, stacks, stackheads, and registers are left entirely to the judgment of the heating contractor, some inappropriate selections are highly probable.

Unit Piping Systems

Conforming with the proposed method, the proper combination of leader pipes, stacks, and registers have been listed as a *unit.*

(c) Quoting from Note Number 5 in the Standard Code:

"It is understood in using the values for determining basement warm-air pipe areas that these pipes should be run comparatively straight and that they should not be over 12 feet in length. Sharp turns and long pipes should have extra capacity. When warm air pipes exceed 12 feet in length or have more than two 90-degree turns, the next larger commercial size pipe must be used. When increases are made, *corresponding increases in sizes should be made in stacks, fittings and registers.*"

This note has often been ignored in practice. In many cases, increases in leader pipe areas have been made without the corresponding increases in sizes of stacks, fittings, and registers.

In the method proposed in this circular, rating tables of the equipment units are presented which incorporate the effects on capacity of long leader pipes and of large numbers of elbows in the run.

(d) The large number of sizes of fittings and registers now being offered commercially has resulted in increased costs of production not only for the fittings manufacturer but also for the jobber and dealer. These costs are ultimately transmitted to the consumer. Attempts at standardization of parts and sizes have previously been made by individual companies, but no uniformity has existed between the practices of these companies.

In this circular the number of sizes of all component parts has been reduced to the minimum necessary to satisfy all requirements, and the subsequent combinations of parts have been listed as standard equipment units. These sizes and parts have been accepted as a standard for gravity warm-air heating systems by the National Warm-Air Heating and Air Conditioning Association.

(e) Three different ratings, in terms of square inches of leader pipe, have been required for each furnace, depending upon whether the furnace was to be used for heating only the first story, only the second story, or both stories of a house.

In the proposed method the furnace rating is expressed in terms of B.t.u. per hour delivery at the register faces, and only one rating is necessary regardless of the number of stories to be heated.

(f) Even though the cross-sectional areas have been maintained in accordance with Code requirements, many warm-air furnace systems have been installed with inadequate return-air capacity, with the result that the register air temperatures have been excessively high, fuel consumption has been larger than necessary, and furnaces have been overheated. This is true because the return-air capacity is affected by the length of duct and the number of sharp turns in the duct system as well as by the cross-sectional area. A long return duct having many sharp elbows may have less than 50 per cent of the capacity of a shorter, more streamlined return duct having the same cross-sectional area.

In this proposed method, return-air duct systems are reduced to the five most common types, and the capacity ratings are listed in terms of B.t.u. per hour serviced.

(g) Catalogues of register manufacturers show, in some cases, over 100 different sizes of return-air grilles. In this circular sixteen sizes have been selected as standard.

It is apparent from the preceding summary of the limitations and misapplications of the Standard Code that the fault exists neither in the fundamental data upon which it is based nor in the method of presentation in the text. Any modification of the Standard Code which will simplify the procedure of designing a gravity warm-air furnace system and which will at the same time permit fewer decisions based on personal judgment to be made by the heating contractor may be regarded as an improvement. The object in view in this circular, therefore, has been to present a method which may be considered as an extension of or a practical application of the principles underlying the Standard Code, without any implication that the Code in itself should be discarded.

Carrying Capacities of Leaders and Stacks

4. *Selection of Register Air Temperatures.*— The values for the heat carrying capacities of leader pipes used in the Standard Gravity Code are approximations based on the test results shown in Fig. 1. The values were selected for a register air temperature of 175 deg. F. for first, second, and third story registers. In actual practice the register air temperatures for first, second and third story registers differ one from another. Hence, taking into consideration only two-story

buildings, a more logical approach consists of determining a bonnet air temperature, which in conjunction with average temperature drops between the bonnet and the registers, would give an average of 175 deg. F. for the air leaving the first and second story registers.

An examination of the individual published test data for first and second story registers, used in connection with a leader length of 8 feet, showed that, for a bonnet temperature of 200 deg. F., the average temperature drops between bonnet and registers were 20 deg. F. and 30 deg. F. for first and second story registers, respectively.

The corresponding register air temperatures were 180 deg. F. for the first story and 170 deg. F. for the second story, or an average of 175 deg. F.

5. *Carrying Capacity of First-Story Leader Pipes for Basic Runs 8 Ft. in Length.*—The average carrying capacity of leader pipes 8 ft. long leading to first story registers, and with one elbow attached to the boot connection, was determined from Fig. 1. For a register air temperature of 180 deg. F. the average carrying capacity per square inch of leader pipe area was 113 B.t.u. per hour. This value applies to the case in which the free area of the register is equal to or greater than that of the leader pipe. Tests reported in Bulletin 188 indicated exceedingly small differences in capacity between first-story floor registers and first-story baseboard registers of the same size. Therefore, for the purpose of this analysis the value of 113 B.t.u. per sq. in. has been considered as applicable to both floor and baseboard locations, and the capacities of the leader pipe, boot, and register combinations shown

(*Univ. of Ill. Eng. Exp. Sta. Bul.* 141, *Reference curves Nos.* 15 *and* 30 *in Figs.* 14 *and* 15 *for second story registers. Eng. Exp. Sta. Bul.* 188, *Figs.* 28 *and* 34 *for first story registers.*)

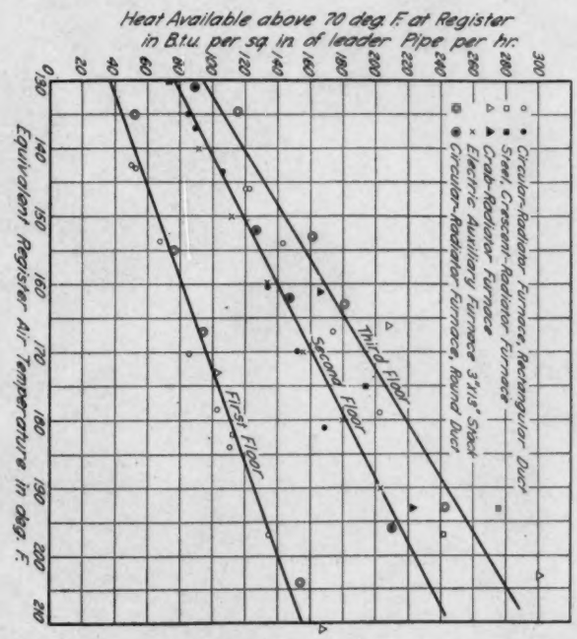

Heat Available above 70 deg. F. at Register in B.t.u. per sq. in. of leader Pipe per hr.
Equivalent Register Air Temperature in deg. F.
First Floor
Second Floor
Third Floor
Circular-Radiator Furnace, Rectangular Duct
Steel, Crescent-Radiator Furnace
Cast-Radiator Furnace
Electric Auxiliary Furnace 3'x13' Stack
Circular-Radiator Furnace, Round Duct

Fig. 1. Carrying Capacities of Leader Pipe for First, Second, and Third Stories

TABLE 1
WARM-AIR CARRYING CAPACITY OF LEADER PIPES TO FIRST-STORY REGISTERS*

Leader Pipe		Carrying Capacity, B.t.u. per hr.	
Diameter in.	Area sq. in.	Register Free Area Equal to Leader Area†	With Commercial Sizes of Registers‡
8	50.3	5 680	5 680
9	63.6	7 180	7 180
10	78.5	8 870	8 870
12	113.1	12 780	12 590
14	154.0	17 400	16 530

*Length of leader pipe = 8 ft.; one 90 deg. elbow at boot fitting.
†See Table 2 for floor registers.
‡See Table 3 for baseboard registers.

TABLE 2
COMMERCIAL SIZES* OF FLOOR REGISTERS FOR FIRST STORY

Unit	Leader Pipe		Floor Register			Ratio of Free Area to Leader Area
	Diameter in.	Area sq. in.	Size in	Opening Area† sq. in.	Free Area‡ sq. in.	
1a	8	50.3	8 x 10	73.4	55.0	1.09
2a	9	63.6	9 x 12	100.5	75.3	1.18
3a	10	78.5	10 x 12	111.9	84.0	1.07
4a	12	113.1	12 x 14	158.2	118.7	1.05
5a	14	154.0	14 x 16	213.0	159.8	1.04

*Sizes designated as standard by register manufacturers.
†Opening sizes assumed as ¾ in. less than listed register sizes.
‡Free area assumed equal to 75 per cent of the opening area.

TABLE 3
COMMERCIAL SIZES* OF BASEBOARD REGISTERS FOR FIRST STORY

Unit	Leader Pipe		Baseboard Register				Ratio of Free Area to Leader Area
	Diameter in.	Area sq. in.	Size in.	Extension in.	Opening Area† sq. in.	Free Area‡ sq. in.	
1b	8	50.3	10 x 8	2¼	73.4	55.0	1.09
2b	9	63.6	12 x 8	2¼	88.7	66.5	1.05
3b	10	78.5	12 x 9	3¼	100.5	75.3	0.96
4b	12	113.1	13 x 11	5¼	134.2	100.8	0.89
5b	14	154.0	14 x 12	5¼	158.2	118.7	0.77

*Sizes designated as standard by register manufacturers, except the 14 x 12 size, which was not specified.
†Opening sizes assumed as ¾ in. less than listed register sizes.
‡Free area assumed equal to 75 per cent of the opening area.

in the third column of Table 1 were obtained by multiplying the corresponding leader areas by 113.

The commercial sizes shown in Table 2 for first-story floor registers have been designated as standard sizes by the register manufacturers. For example, Unit No. 1a refers to a combination of an 8-in. leader pipe connected to an 8-in x 10-in. register. For Units Nos. 1a to 5a the ratios of register free area to leader pipe area are in every case greater than 1.0. Hence, the capacities shown in the third column of Table 1 apply directly to combination Units Nos. 1a to 5a.

Table 3 lists the commercial sizes of first-story baseboard registers which have been designated as standard sizes by the register manufacturers. With the exception of Unit No. 1b, the register sizes listed for baseboard locations are slightly smaller than those listed for floor locations. For example, Unit No. 2b has a 12-in. x 8-in. baseboard register, whereas Unit 2a has a 9-in. x 12-in. floor register. The values given in the last

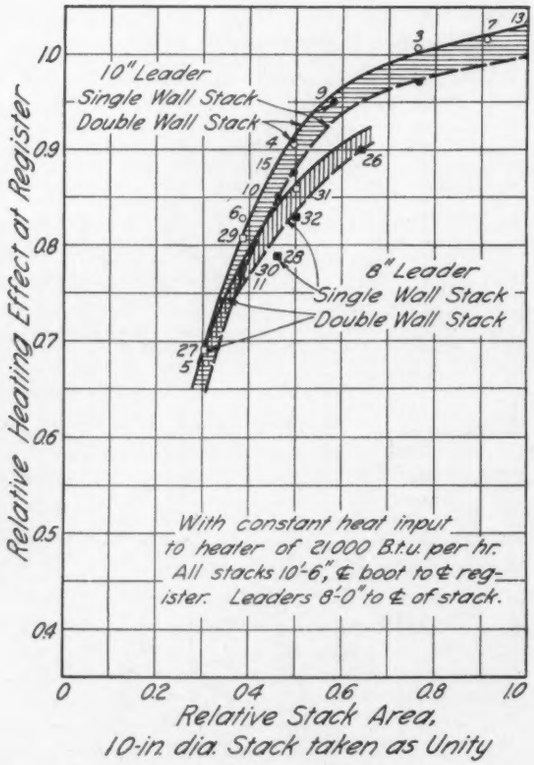


Fig. 3. Influence of Ratio of Stack Area to Leader Pipe Area at Constant Heat Input

column of Table 3 indicate that for Units Nos. 4b and 5b the ratio of register free area to leader area is materially less than 1.0. That is, some amount of restriction to air flow exists at the register face so that the full capacity of the leader pipe would not be obtainable.

The data from Bulletin 188, showing the relation between the relative heating effect at the registers and the ratio of free area to leader pipe area, has been replotted as shown in Fig. 2. The reduction in heating effect for ratios of 0.89 and 0.77 were respectively 1½ and 5 per cent. The capacities shown in the last column of Table 1 for 12-in. and 14-in. leader pipes were, therefore, made 1½ per cent and 5 per cent less than the corresponding capacities shown in the third column of the same table.

Since the capacities given in the last column of Table 1 are more conservative than those given in the third column, they have been considered as basic for carrying capacities of Units Nos. 1 to 5, and have been used in the tables of carrying capacities of combinations employing both floor and baseboard register locations.

6. *Carrying Capacity of Second-Story Stacks and Leader Pipes for Basic Runs 8 Ft. in Length. (Single-Wall Stacks and Fittings.)*—In the case of a second-story run, the leader pipe, boot, stack, stackhead, and register should be considered as component parts of an integral unit rather than as individual unrelated items. The carrying capacity of such a unit is dependent to a great extent on the size of the most restricted part, which in most installations is the stack. The curves shown in Fig. 3 indicate that for cases in which the ratio of stack area to leader-pipe area

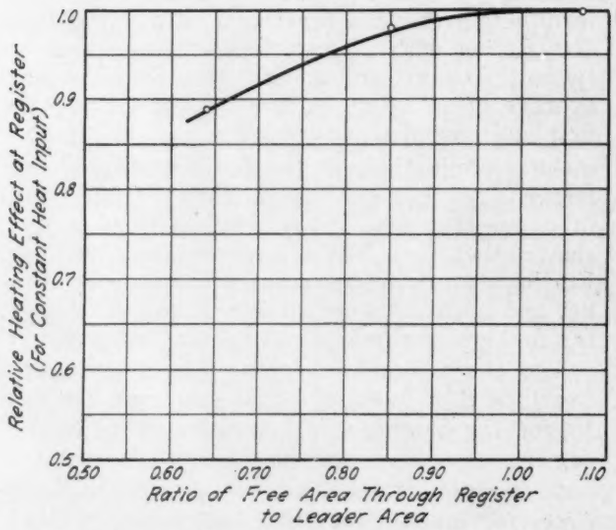


Fig. 2. Heating Effect at Register as Affected by Free Area Through Register

is 0.7 or greater, practically the full carrying capacity of the leader pipe will be obtained. However, for cases in which the stack area is less than 0.7 of the leader area, the most restricted area in the warm-air run exists in the stack, and the carrying capacity of the unit will be dependent primarily upon the stack size (Univ. of Ill. Eng. Exp. Sta. Bul. 141, p. 137). Specific data confirming this statement are presented in Table 4. Two cases are shown in Table 4A in which an 8-in. and a 10-in. leader pipe were separately attached to the same stack. In both cases, although increasing the diameter of the leader pipe from 8-in. to 10-in. enlarged the leader-pipe area by 56 per cent the capacity were increased only 7 per cent, or one-eighth of the increase effected in the leader area. Thus, for a given size of stack, a large percentage increase in the leader-

(*Continued on page* 147)

TABLE 4
COMPARISON OF CARRYING CAPACITY OF STACKS AND LEADERS AS AFFECTED BY ACTUAL STACK AREA (SINGLE-WALL)

		Case 1	Case 2	Case 3	Case 4
Reference	Bulletin No.	141	141	141	141
	Page No.	47	46	47	46
	Curve No.	30	11	28	10
Stack	Size, in.	3 x 10	3 x 10	3 x 12	3 x 12
	Type of wall	single	single	single	single
Leader pipe	Diameter, in.	8	10	8	10
	Length, ft.	8	8	8	8
Ratio of area of stack to leader		0.598	0.382	0.717	0.458
Register temperature, deg. F.		170	170	170	170
Delivery, B.t.u. per hr.		7350	7900	8650	9200

A. Comparison of Two Sizes of Leaders on Same Stack

Comparison of	Cases 2 and 1	Cases 4 and 3
Ratio of leader area	1.56	1.56
Ratio of deliveries	1.08	1.06

B. Comparison of Two Sizes of Stack on Same Leader

Comparison of	Cases 3 and 1	Cases 4 and 2
Ratio of stack area	1.20	1.20
Ratio of capacities	1.176	1.165

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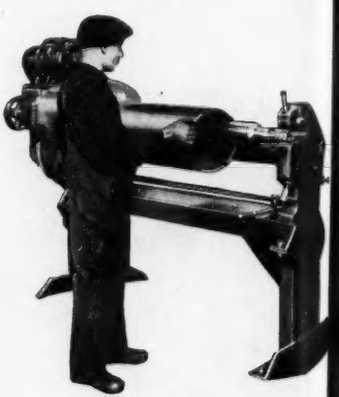

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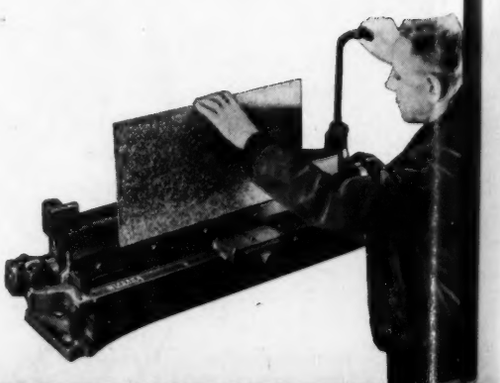

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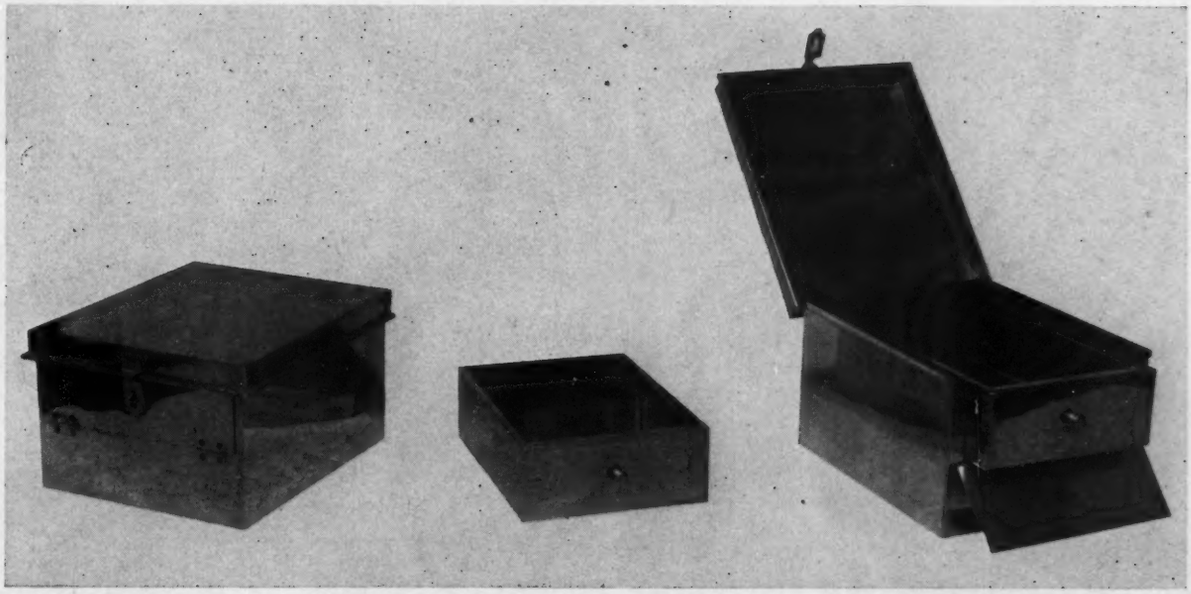


Three views of the aluminum box and the drawer whose fabrication as a "war product" is described in this article. Note the round moulds on the front and sides of the c over and the hinged lower, front door. Excellent workmanship is indicated.

Aluminum Boxes and Drawers

(*Estimating and Fabricating a War Product*)

By Martin E. Marsalis

Owner, American Metal Products Co.
Ft. Worth, Texas

CARNEY WRIGHT, our shop foreman, sadly contemplated two ragged holes in the almost complete "aluminum box" which rested on his desk. Filling those holes and removing the surplus weldmetal, plus the necessary buffing, would be a time consuming task. The workman operating the electric spot welder had accidentally allowed the edge of the box to touch the welder arm, whereupon, when the welder points were brought together and the contact made, a loud popping noise ensued, accompanied by a "flashed hole" at the weld point.

This was just one typical problem of the many problems encountered and satisfactorily solved when our company undertook the fabrication of the "aluminum boxes and drawers" which are shown in the photographs and drawings and discussed in the text of this article.

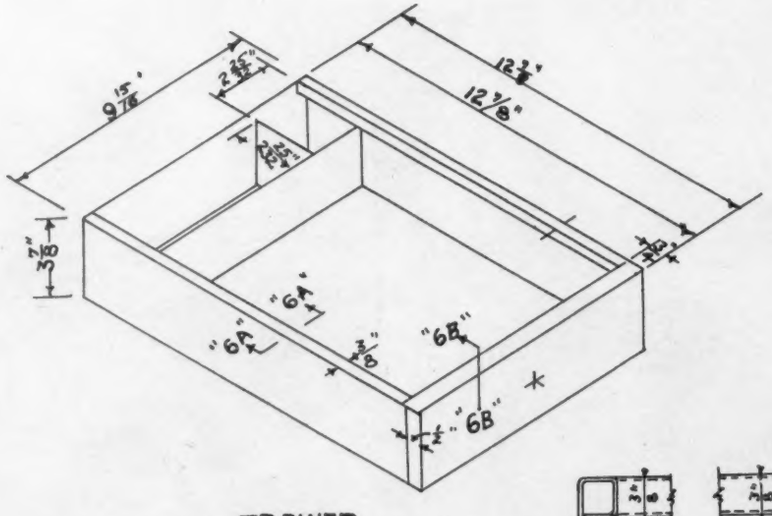
Our first reaction on receiving an invitation to bid on this job was "to pass it up." Our experience with aluminum was somewhat "sketchy" and the problems involved looked tough to us. However, we had spent considerable time and money looking for sub-contracts on war work so our shop could keep going, and although we had uncovered several jobs to bid on prior to this one, none of them was very near to any of our regular products. Figuring that we would be compelled, sooner or later, to take on something that would be "off the beaten track" to us, we determined to figure this job and get it if possible. This article is evidence of the luck we had.

For the interest and possible assistance which it may offer to other sheet metal contractors, the author has endeavored to present here a detailed description of the methods used in figuring and fabricating this job.

Having no cost records on this type of work, our first problem was to estimate the labor cost. This could not be attempted before methods, kinds of dies, machine operations, etc., were decided upon. Having determined this latter, the following procedure was used for estimating the "man hours" involved and proved to be exceptionally accurate in this instance.

Method of Estimating Labor

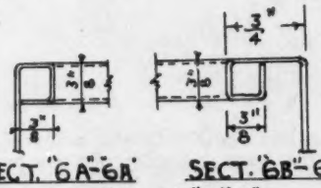
First a list was prepared which showed each single operation involved and the method of performing the operation. Beginning with the flat aluminum sheets, theoretically delivered to our door, each individual operation was performed by



DRAWER

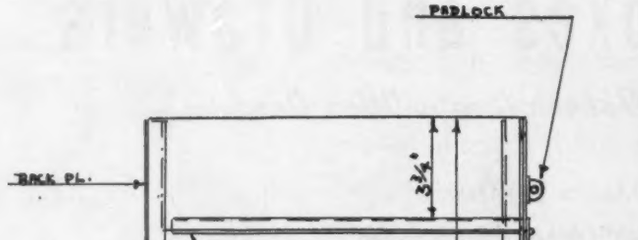
SCALE: 3" = 1'-0"

FRONT .064 SNTS.
REST- .040 SNTS.

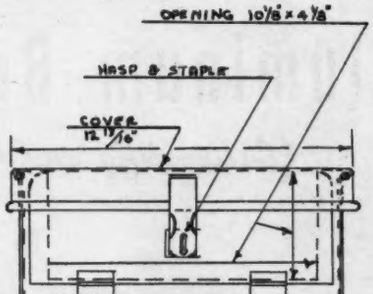


SECT. "6A"-"6A" SECT. "6B"-6B

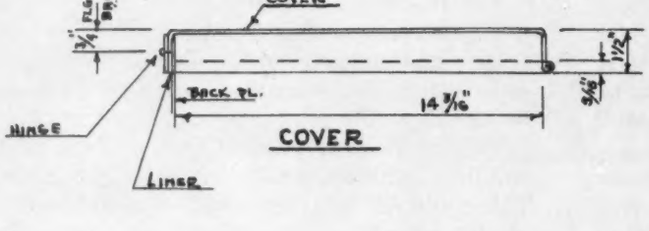
SCALE- 12" = 1'-0"



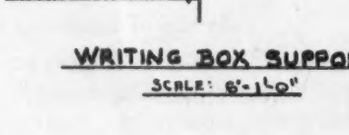
SECT. "7-7"



ELEV.

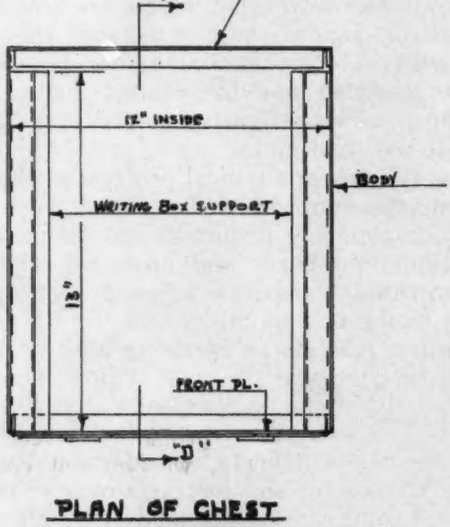


COVER



WRITING BOX SUPPORT

SCALE: 6'-1'-0"



PLAN OF CHEST
COVER OMITTED

SCALE: 3" = 1'-0"

ALL .050 SHEETS.

Photo No. 1—Dies, stop gages, jigs—all shop made—displayed according to piece groups. All these were used on a small punch press and a 10-foot press brake. Since the shop had no machine tools, all machining was done "outside." These items represented only a "modest investment."

the shop foreman, with the author timing him with a stop watch. Number of operations per five minute period was used as a basis. To the time thus obtained was added a flat fifty per cent to compensate for unforeseeables. During this timing period, although no actual sheets were handled, the required machines were actually operated and all motions simulated. The pace used was a deliberate one, in order that the average workman's time might be arrived at. Time required in moving material from one operation to the other was included. We have since used this method on other unfamiliar work with gratifying accuracy.

Summary of Problems Involved In Planning and Execution

1—Incomplete plans and specifications.
2—Selection of methods and sizes of sheets.
3—Designing of dies, jigs and gages.
4—Shearing, moving and protecting from scratches.
5—Punching and notching.
6—Forming.
7—Assembling.
8—Applying hardware.
9—Grinding and polishing.
10—Final inspection and touch up by our own inspector.
11—Final cleaning.
12—Government inspection and packing for shipment.

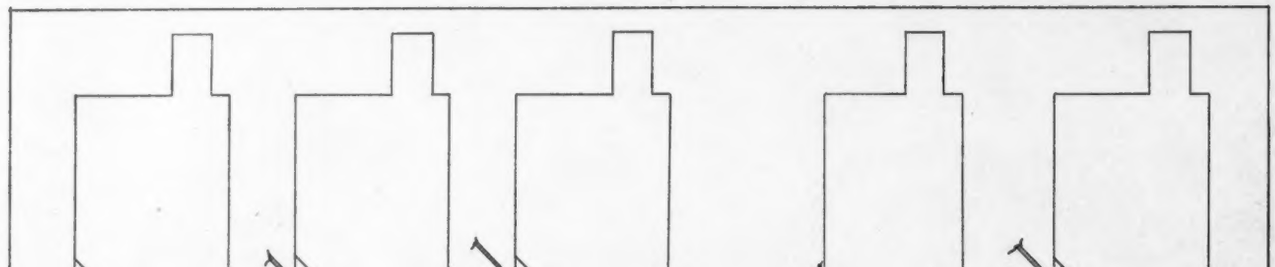
Elaboration of Summary

1—Drawing No. 1 of "Boxes and Drawers" facing is an exact copy of the prints from which this job was figured and made up. Note the absence of any dimensional tolerances, methods of securing seams and miters, or of applying hardware. Note also the round moulds on front and sides of cover which required mitering at front corners. Note the "box moulds" on sides and front of drawer.

2—As no size penalties were involved, special size sheets were ordered which showed a nice saving as compared to standard size sheets. Riveting of seams appeared impractical due to cost. Consequently, "spot welding" was selected for all possible seams, in spite of our concern over possible difficulties. Other shop owners consulted were pessimistic over the problems involved. However, a letter to the makers of our welders brought us valuable suggestions which put us on the right track. As a lap seam on the cover (Drawing No. 1) would have involved a complicated and expensive die, hydrogen gas welding was selected for this purpose. The hardware being of cadmium plated steel, riveting on with aluminum rivets appeared to be the best method.

3—Designing of the proper dies, jigs and gages presented our most difficult problem. Although we had done a small amount of work which involved the use of such aids, our experience was pretty well limited to the usual type of work which falls to the lot of the average "fair sized" shop. While the number of boxes and drawers in this contract was rather large for a sheet metal shop, it was by no means large enough to permit more than a very modest expenditure of dies.

With this in mind and considering the small punch press and the ten foot press brake which we had available for mounting our dies, the dies, gages and jigs which are shown in Photograph No. 1 were worked out. Note that a good portion of this equipment is either partly or entirely



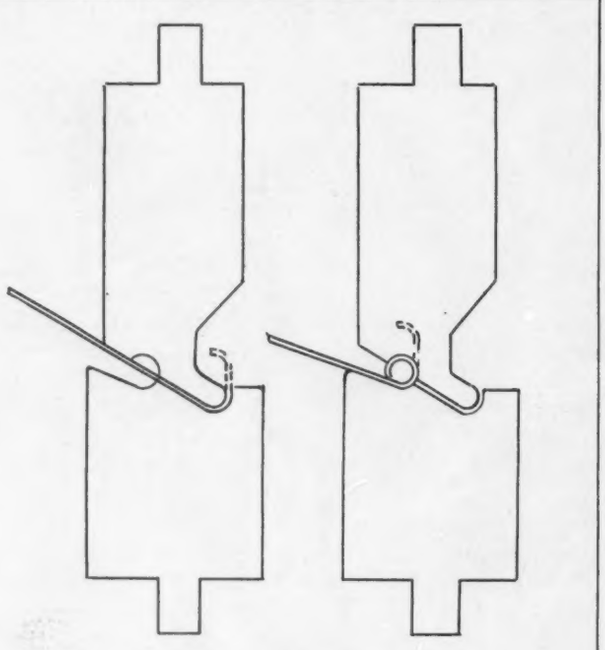
VARIOUS STEPS IN FORMING "BOX MOULDS."

Drawing No. 2—These dies for making a box mould were somewhat "temperamental," but satisfactory.

Drawing No. 3, below, shows the cover mould die and its three operations. Note that three dies served for eight forming operations.

"home made." As our equipment included nothing in the way of machine tools, all the necessary machining was "sent out." Of particular interest are the dies for the following operations: Notching corners on covers, in such a manner as to leave a mitered mould after forming; forming of the box moulds, and punching for hardware.

Detailed drawings of some dies are shown in Drawings No. 2 and 3; stop gages were made from ordinary cold rolled flats having a square edge. Jigs for holding hardware in place during riveting operation are also shown in Drawing No. 4 (Section A-A). It might be mentioned that covers, after forming, were dropped between pieces of hardwood nailed on the bench and a thin hacksaw blade was run between miters on round mould for clean up and weld deposit space. The wooden pieces held the cover in alignment during this operation. As no dimensional tolerances were specified, we judged that a variation of one thirty-second of an inch would be acceptable, and such proved to be the case. In order to allow for the "human element," gages were set up to one sixty-fourth of an inch, with the aid of a machinist's scale. Our past experience had never included the working to such close tolerances, but it proved reasonably easy of accomplishment.



DIE FOR FORMING COVER MOULDS.

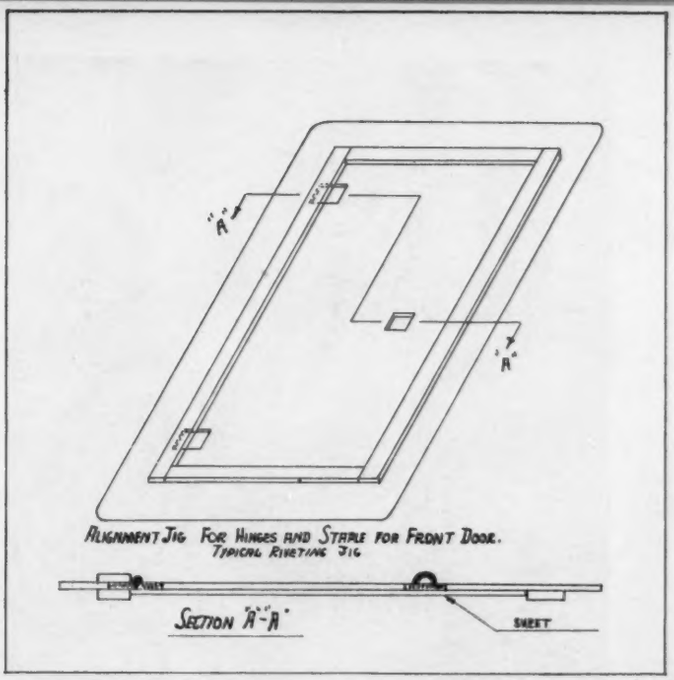
Shear and Brake Protection

4—Most of the shearing was done on a six foot, eighteen-gauge, foot power shear. The shear bed was carefully smoothed down, with a fine file and an electric sander. The bed was then covered with heavy wrapping paper, liquid glass, or sodium silicate being used as an adhesive. This paper was occasionally replaced as it became worn. Hot water readily removed the adhesive. Extra "decks" were added to our "roller benches" in order to provide the space needed for segregation and storage of the various parts. Each piece of metal was separated from the other by means of old newspapers. All gages and jigs were covered with the heavy paper. The press brake dies (Photo No. 2) were covered with ordinary adhesive tape, and talcum powder was sprinkled on at intervals. The powder acted as a lubricant, also prevented the adhesive from soaking through

onto the sheet. Throughout the entire job, care was taken to prevent any metal to metal contact, wherever a scratch might result. This resulted in a completed item which was remarkably free of scratches.

5—Punching for the two different size hinges, hasp and staple and drawer knob, proved to be very simple. Ordinary dies and punches, of the sort that are normally used in hand punches, were mounted on two inch wide by one-half inch thick flat bars. These bars were then mounted on an old "die shoe." By switching the punches only, for the various hole combinations, holes for each piece of hardware were punched in a single stroke.

Square corner notching was done with the standard "L" shaped die, shown in the die photograph No. 1. Notching die for cover is shown on right hand corner of bench, in same picture. Note particularly the length of angle iron fastened to the fronts of the "die shoes" in picture. The various gages shown in background of picture are easily and quickly changed as required by the removal of the two bolts which hold gages to the angle iron. This method was also used on press brake dies and proved very satisfactory. Notching and forming was carefully controlled, in order to secure accurate fits and to eliminate open seams and crevices.



Drawing No. 4—Simple jig made of heavy gauge sheet and band iron strips held the cover and hardware in alignment while the hardware was riveted on. Self-imposed tolerance of 1/32-inch was used, so gages were set to 1/64th. to allow for mechanics' errors.

Below—Photo No. 2—The 10-foot brake was equipped with five sets of progressive dies so that five successive operations might be made at one stroke. Adhesive tape, sprinkled with talcum, on the dies, eliminated scratching, sticking and provided lubricant.

Photo No. 3—"Flashing" from the piece touching metal parts of the spot welder when a spot contact was made was prevented by covering all metal parts except the points with pieces of inner tube and electricians' tape.

6—Forming presented the greatest difficulties. Our "home made" dies, Drawings 2 and 3, were somewhat temperamental, and considerable adjusting, changing and experimental work was necessary before the desired results were forthcoming. Various steps in forming the more complicated parts are illustrated by Drawings 2 and 3.

Spot Welding Problems and Solutions

7—In assembling, we first found that aluminum sheets were difficult to "spot weld" without leaving a small "whisker" around the weld. Also that it was impossible to determine whether a weld was securely made and would not pop loose when our inspector gave them the hammer test. Also the type of water cooled welding points we were using, showed a decided tendency to overheat, thus slowing down the operation.

The "whiskers" were eliminated by using a slightly domed point, having a contact surface of approximately three-sixteenths of one inch. As the weld was made and the final pressure applied, the metal being welded was rotated, using the point as an axis. This eliminated the formation of the "whisker" and left a beautiful, smooth weld. Points were kept carefully sanded and dressed. Small scraps were kept handy to each welder and sample welds made and torn apart after each sanding or dressing. This gave a test of the weld at frequent intervals and practically eliminated weld failures. Overheating was greatly abated by substituting points which permitted the water to spray up inside the points. Spot welding machines were carefully adjusted for pressure and heat. All electrical connections of these machines were kept clean and bright, in order to assure the extra welding capacity required for aluminum sheets.

After a dozen or more ragged holes had "flashed" in our work, we found that should the aluminum touch the welding arms or any other part of the machine besides the actual welding points themselves, a loud explosion would occur and the points would produce a bad hole in our work. This was overcome by covering all points on the welder, likely to be touched, with old inner tubes and securing them in place with electrician's tape (Photo No. 3). Only a small portion of the actual welding point was left exposed. Ends of boxes and drawers were held in place for the welding operation by use of the simple band iron clamps (Photo No. 3), tipped with rubber grommets, shown being applied by workman in photograph. Spacing of partitions in drawers and drawer slides in boxes was accomplished by means of hardwood blocks of proper size. Hydrogen welding of the cover was done in the simple positioning jig shown in Photo No. 4.

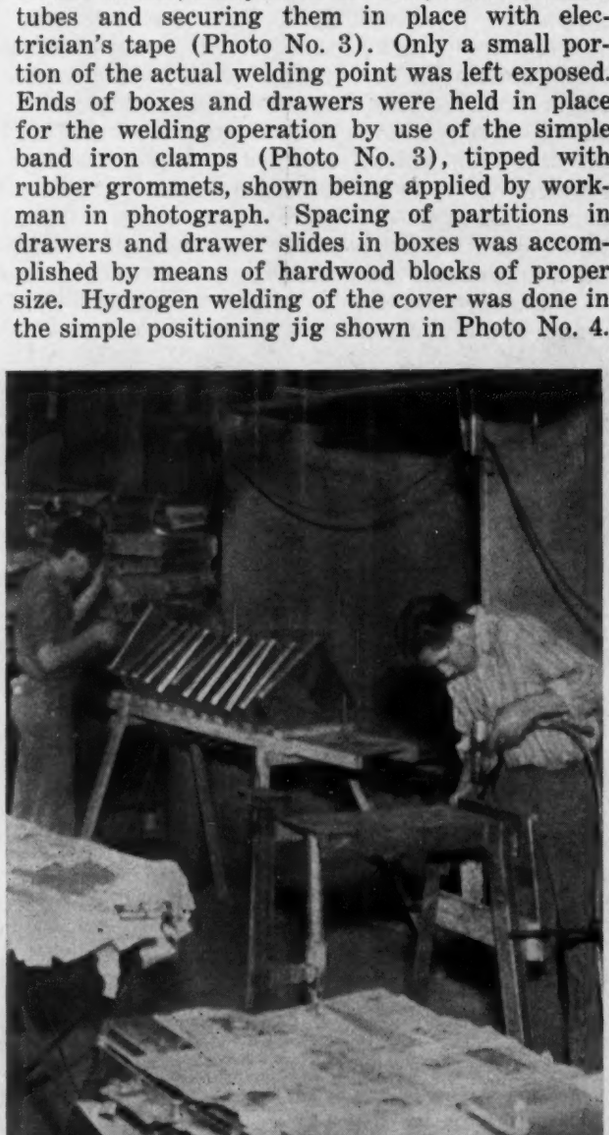


Photo No. 4—Mechanic in background is hydrogen gas welding the cover lap seam to eliminate expensive die work. Mechanic in foreground is riveting on hardware while the piece is held in the jig which eliminated a helper. Pneumatic gun is used.

8—The hardware was attached with "brazier head" aluminum rivets. The rivets were driven against a backing plate by use of a small riveting gun. This operation is shown in Photo No. 4, using one of the combination riveting jigs, which required no helper. To prevent hardware from slipping during the riveting operation and thus becoming misaligned, the simple holding jigs shown in drawing No. 4 were used. As the proper size button riveting die was used and all heading of rivets done inside, a nice, smooth appearance resulted.

Grinding Inside and Outside Welds

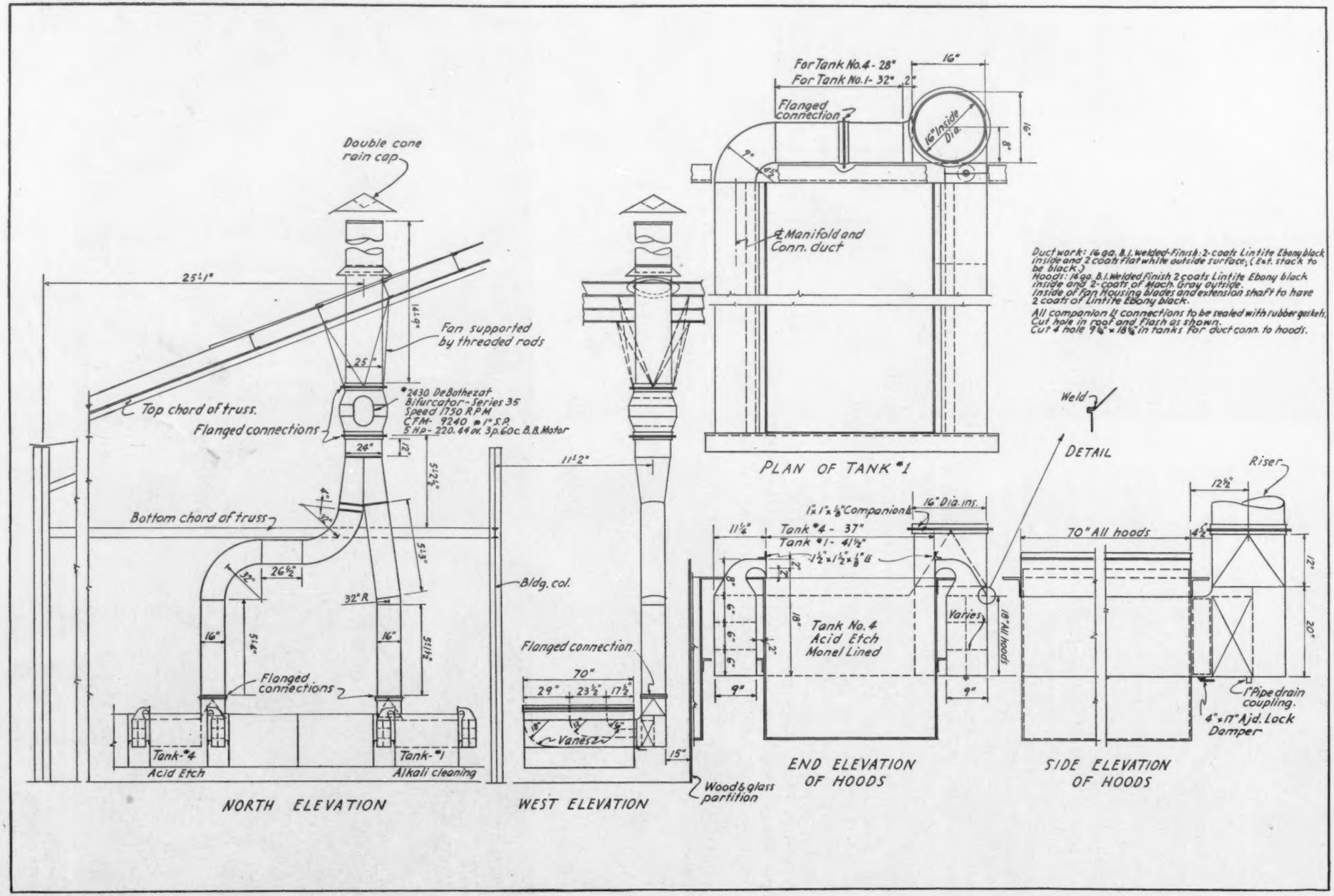
9—Welding of corners on the covers left a considerable bead and, contrary to our expectations, this bead proved to be quite hard. Size and hardness of this bead, plus the difficulty of "getting to the work," brought about by the round mould (Drawing No. 1, Section 6A, 6B), presented a nice problem in the removal of excess weldmetal. It was solved as follows: Rough grinding was done on a grinder equipped with a ten inch diameter, open cut, aluminum cutting grinding wheel (Photo No. 5). Practice enabled workmen to remove surplus material very close to the sheet itself without leaving scratches which would have been difficult to remove. A small, air operated, die grinder was purchased and equipped with small cutters. This tool enabled us to rapidly remove surplus metal in the hard inside corners. Another and higher speed grinder was equipped with six inch diameter cloth wheels. These wheels were treated on the edges with hot belt glue. While the glue was still liquid, the wheels were rolled in the shallow pans whose bottoms were covered with fine abrasive grit. Medium grit on one wheel, very fine grit on the other. Spare wheels covered with each grade grit were kept on hand. Each wheel lasted from one to two hours before the grit wore off. The rough grit completed the removal of all surplus metal, while the fine grit wheel produced a satiny polish which required no further finishing.

Photo No. 5—Outside corner welds in covers were ground on a 10-inch open cut aluminum cutting wheel. Inside welds were ground with small air-operated hand die grinder. Semi-finish grinding (inside and outside) was done with hot glue and medium abrasive on a "cloth wheel"—final polish with the same type wheel but fine abrasive. A wheel lasted about two hours.

The miters between the box moulds on fronts and sides of drawers were hammer peaned and

(*Continued on page* 151)

Photo No. 6—To facilitate final government inspection, boxes were carefully stacked on paper. Shipping cartons were placed nearby (left). A portable bench was set up and laborers han ded the inspector a box which, after approval, was placed on the bench and then put into the carton. Any rejections were tagged to show error.


Double cone rain cap
25'-1"
Fan supported by threaded rods
Top chord of truss.
Flanged connections
*2430 DeBothezat Bifurcator - Series 35 Speed 1750 R.P.M. C.F.M. 9240 @ 1" S.P. 5 Hp - 220, 44 cy. 3p. 60c. B.B. Motor
Bottom chord of truss
Bldg. col.
Flanged connections
Tank "4" Acid Etch
Tank "1" Alkali cleaning
NORTH ELEVATION
WEST ELEVATION
For Tank No. 4 - 28"
For Tank No. 1 - 32"
Flanged connection
16" Inside Dia.
Manifold and Conn. duct
PLAN OF TANK "1
Duct work: 16 ga. B.I. welded-Finish: 2 coats Lintite Ebony black inside and 2 coat flat white outside surface, (Ext. stack to be black.)
Hoods: 14 ga. B.I. welded Finish 2 coats Lintite Ebony black inside and 2 coats of Mach. Gray outside.
Inside of fan housing blades and extension shaft to have 2 coats of Lintite Ebony black.
All companion & connections to be sealed with rubber gasket.
Cut hole in roof and flash as shown.
Cut 4 hole 9⅝" x 16⅝" in tanks for duct conn. to hoods.
Weld
DETAIL
Riser
1"x1"x⅛" Companion
16" Dia. ins.
Tank "4" - 37"
Tank "1" - 41½"
Tank No. 4 Acid Etch Monel Lined
Varies
18" All hoods
70" All hoods
1" Pipe drain coupling.
4" x 17" Adj. Lock Damper
Wood & glass partition
END ELEVATION OF HOODS
SIDE ELEVATION OF HOODS

Vaned Manifold, Horizontal Slot, Oxide Cleaning Fume Removal System

The general layout of the installation described is shown on the facing page. Note especially the location, dimensions, radii of the vanes in the West Elevation and End Elevation details.

IN the January, 1942, issue of the Artisan, an article described the excellent results obtained by side slots for exhaust above a degreasing tank and supplied graphs showing comparative results with vertical slot, round holes, elongated holes, etc. An important finding of that report was the uniformity of air withdrawal when vanes were installed in the manifold.

The two photographs taken in the Marshall shop show the vaned manifolds ready for installation. Weld spots show location and curves of vanes. The "gooseneck" was necessary to clear the tank's top reinforcing angle.

The Norton C. Marshall Company of Detroit constructed the system shown in the drawing with similar side slots and vanes to exhaust fumes from oxide cleaning tanks where Duraluminum sheets are dipped to remove the lead oxide coating.

The feature of the installation is the use of vanes in the manifold to obtain uniform air removal along the length of the slot. As the January article pointed out, a horizontal slot with proper vanes to equalize air withdrawal proved most efficient in reducing solvent exposures and required the least power; there was no tendency for the fumes to "roll" over the edge of the tank; air in the operator's zone was satisfactorily free from fumes.

Without the vanes, air withdrawal is not usually uniform unless an intricate slot and manifold construction is employed to control withdrawal by progressively changing the area of the slot opening. Better results with simplified slot construction can be obtained by using the vanes.

Vane Location and Dimensions

In the Marshall installation, the manifold was divided into three equal vertical spaces; each space being 6 inches in height as shown in the drawing and photographs. Longitudinally, the vanes are 29, 23½ and 17½ inches from the exit end as shown in the West Elevation detail and curve up in 18, 12 and 6-inch radii (same detail).

Each manifold was built complete in the Marshall shop as shown in the photographs. The manifold proper is 14 gauge, the vanes are 18

Fittings in the piping system are also welded. Note the streamlined "Y."

gauge. Attention is called to the fact that the vanes have no flanges; instead the edge of the vane was tack welded to the side as shown, obtaining a tight edge by cutting vanes for a tight fit. The photographs show the number and location of the tacks and the curve of the vanes. As shown in the drawing, each tank is 70 inches long by 37 or 41½ inches wide. The manifold is 9 inches wide by 18 inches high in the rectangular section.

To place the slot at the edge of the tank and to clear the tank edge reinforcing angle, the goose neck shown was built on radii indicated on the End Elevation detail and top, bottom and ends were joined by continuous welds. The goose neck was joined to the manifold by a single seam with weld metal deposited as shown in a detail.

Operating Data

The general design of the system is worth study. Each slot measures 2 inches high by 70 inches long or 140 square inches—approximately 1 square foot. There are four slots equally dividing the total of 9,240 cfm withdrawn by the DeBothezat Bifurcator unit shown in the Elevation. This gives approximately 2,310 cfm per slot and since the slot is just about one square foot in area, the velocity at the slot is also 2,310 feet per minute, approximately.

This velocity at the slot considerably exceeds the velocities tested in the January issue example, but Norton C. Marshall Company reports that the pattern of vapor flow follows closely the diagram shown in January and reproduced here. The spirals in the Marshall system are about 4 inches in diameter and rise above the tank surface before entering the slot.

Construction of Piping

The Marshall Company also fabricated and installed the piping system which exhausts the air to the outdoors. From each manifold a 9 by 18-inch pipe connects with a 16-inch round pipe riser as shown in the Plan of one tank. This pipe is welded solid to the manifold and was assembled by a flanged joint gasket as shown in the Plan.

Because one manifold is only a few inches from the stack and the other manifold is the tank width away, some means of balancing air withdrawal from the two manifolds was considered necessary by the Marshall engineers so the adjustable lock damper shown in the Side Elevation of Hoods detail and in the Plan was incorporated. These two dampers (one damper to each tank) make it possible to balance the two tank system.

The round pipe stacks (North Elevation) each 16 inches in diameter and the final stack, 24 inches in diameter, were made in sections as shown by dimensions with seams welded as shown in one photograph. Elbows, turns, transitions, etc., were welded and dimensioned as shown. On the system there are 10 flanged connections as noted on the drawing.

The outside section of stack, the rain hood and the skirt were also made and welded to the pipe before erection.

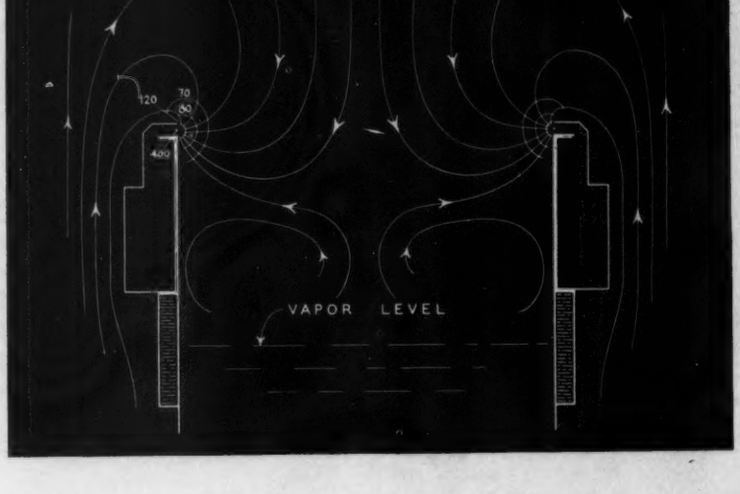


Fig. 10 from January, 1942, Artisan. Velocity contours and streamlines with horizontal slot ventilation. Figures represent air velocities in feet per minute at 0, 1, 2 and 3 in. from slot. Measurements for this set of contours were made at midpoint of sides with a total slot ventilation rate of 615 c.f.m.

The Construction of Large Ducts Using "Substitute" Materials

Two previously published studies on "substitute" material duct construction (May, 1942 and November, 1942) described small residential ducts only. The really large user of substitute board in 1942 has been war plants where sizes up to 100 inches in width and proportionately deep have been constructed. While design is similar to previous descriptions, the method of erecting and fabricating is completely different. Here is a study of two representative contractors' methods and ideas.

[*Foreword by Louis Narowetz, Jr.*]

THE war having created an emergency resulting in a need for metals beyond our capacity to satisfy requirements of both combat services and civilian use, this industry is now using various substitutes, many of which may be used after the war. The question is: will these substitutes replace metal after the war?

The most commonly used substitute seems to be an asbestos fibre product mixed with special cement and made into sheets of various thickness under hydraulic pressure. For ordinary use in duct work, a thickness of 3/16 inch is practical since it is rigid and weighs less than two and one-half pounds per square foot and withstands the general run of job abuse. These sheets are usually 48 inches wide and 96 inches long. For duct work larger than 30 inches, transverse joints are best located to make four-foot sections; using transverse joining strips and corner joining cleats of 24 gauge metal.

Proper Construction Is Needed

This type of assembly has fire underwriters' approval, which must be a moral responsibility assumed by those who undertake the design and specification for substitute materials used in ventilating systems serving areas where human beings are employed.

There have been instances where workmen have nailed or screwed asbestos-cement sheets to wood strips. It should be recognized that construction of this kind, permitted during this emergency, will always be a hazard, violating fire ordinances.

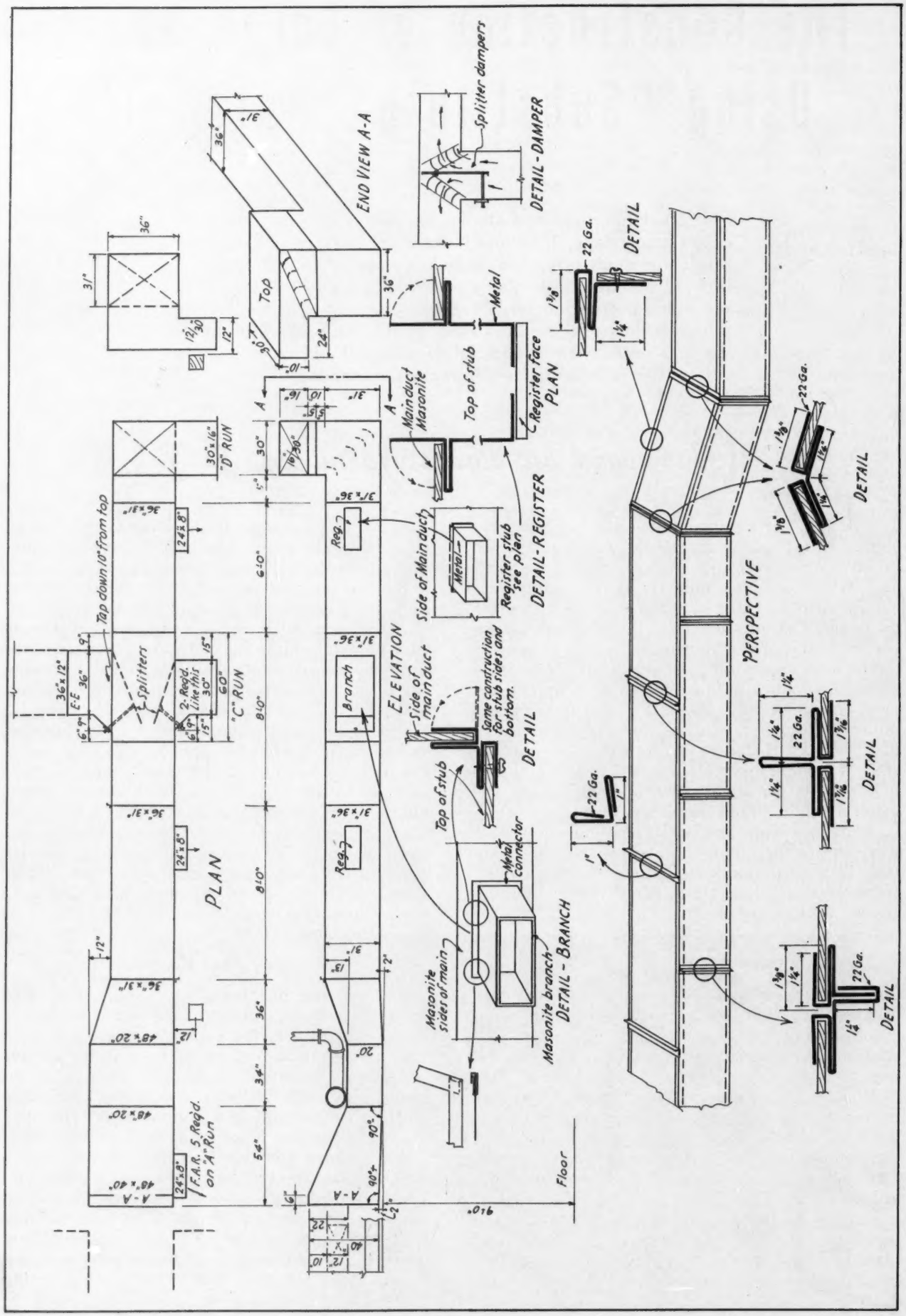
During the past six months I have been privileged to supervise the largest ventilating and blast heating job ever contemplated, using asbestos-cement sheets for duct systems. This job required tooling up a field shop to fabricate more than a million square feet of this type of sheet. Of all the substitutes submitted I think the above type of sheet, in view of its fire resisting quality, is the best adapted as a substitute for sheet metal duct work where cost is secondary to expediency.

Actual cost of the asbestos-cement sheet is more than galvanized iron normally used, because of the limited sizes of sheets available; also allowances for waste are more, and the items of breakage add up to a figure possibly double that used for waste in fabricating metal ducts. The labor involved in fabrication is slightly more than metal, but delivery handling and erection required more men per section to overcome weight and breakage. On the large job mentioned, ducts of sizes smaller than 18 inches in any dimension are apt to cost twice as much as metal, and larger ducts fifty per cent more than sheet metal duct work. Where asbestos-cement sheets are used as a lining to form chambers or tunnels the relative cost is much the same.

Satisfactory Apparatus Housings

For the use of apparatus casings, especially where insulating requirements are specified, a good substitute is the asbestos fibre sheet with the outside surfaces protected by 3/16-inch sheets to form a laminated construction built up to various thicknesses from ½ to 2 inches, depending on the co-efficient of insulation desired. This type of sheet embodies housing, as well as insulation; it has rugged construction and, when properly fitted in place, insures permanence as well as compliance with fire ordinances. Ordinary drills and saws are used in its assembly, with metal joining strips or angles used with cements especially prepared to butter the edges of sheets while erecting to obtain an air tight seal. This finished casing

(*Continued on page* 155)


PLAN
ELEVATION
END VIEW A-A
PERSPECTIVE
DETAIL - DAMPER
DETAIL - REGISTER
DETAIL - BRANCH
DETAIL
Splitters
Tap down 10" from top
"C" RUN
"D" RUN
Branch
Reg.
Top
Top of stub
Metal
Register face
Main duct Masonite
Side of Main duct
Register stub see plan
Same construction for stub sides and bottom.
Metal connector
Masonite sides of main
Masonite branch
Floor
Splitter dampers
22 Ga.

"Masonite" (Pressed Wood) With Metal Connectors

[*Nyland Sheet Metal Co., Indianapolis, Contractors*]

IN PREVIOUSLY published studies of duct construction employing "substitute" materials for metal, the material used has been some form of asbestos composition. But materials other than asbestos composition can be and have been used for duct construction. An example of this use of other materials is shown in the drawing of the ducts built by Nyland Sheet Metal Company of Indianapolis, Indiana in a local war product plant.

The material used was Tempered Presdwood Masonite, 3/16-inch thick which, according to the manufacturers (Masonite Corporation, Chicago) shows a moisture absorbtion of 7.5 per cent in 24 hours and is rated by the National Board of Fire Underwriters as "slow burning material."

In this project the Nyland Company fabricated and erected thousands of feet of duct ranging from 8 by 8-inch branch lines to 72 by 30-inch main supplies.

All fabrication of the duct work was carried on in a job shop. Here the Masonite panels were cut to size and the metal corner angles, metal connectors and miscellaneous metal fittings were formed in brake lengths and later cut to exact dimensions by hack saws or snips.

Drawing, Facing, Shows Construction

To illustrate the Nyland method of assembling the ducts, a typical section of the main is reproduced from job shop drawings with details added to show cross sections of connectors and angles and methods of taking branches or register stubs out of the mains.

In general, the metal connectors and angles follow practices contractors have found make assembly rapid and easy. One departure, of course, is found in the thickness of the "pockets" into which the Masonite is slipped for connection. Masonite, being 3/16-inch thick requires a thinner "pocket" than the asbestos-cement boards or the other asbestos compositions where the board is 1/4-inch or thicker.

When this job was started, metal was completely denied so an attempt was made to use 2 by 3-inch horizontal wood strips for the corners, nailing the Masonite to the strips. Similar strips were tried for the sides, top and bottom joints between panels. But this all wood and board construction proved too heavy, too cumbersome, and not nearly stiff enough to be self supporting in the large sizes required. So the change was made to metal connectors and corners so that the duct, assembled, would be self supporting and without sags or bulges. The drawing shows the final result.

Where the duct was uniform in section and level, panels were made 8 feet long on the sides with the special stiffening angle connector shown in a detail used at each 8-foot interval. For the top and bottom these 8-foot panels were joined with the standing seam back-to-back pocket shown in a detail and then, at 4-foot intervals, an additional formed angle was run across the duct to eliminate all possibility of sagging between panel ends.

Due to pecularities of the building framing, it was frequently necessary to duck the main down and then back up. At points where the main drops or rises a special connector as shown in a detail permitted practically any degree of change by bending the pocket in the brake.

Branches traveling straight out from the main and register stubs in branches were cut into the main at right angles and the branch or stub was joined to the main by a 90-degree pocket mitered at the corner, as shown a detail.

Material Makes a Neat Duct

All through this job the metal connectors and the Masonite were fastened together by running metal screws through two or more thicknesses of metal and the board. Details show screws in place. Because Masonite is very dense and also possesses inherent stiffness, these metal screws could be placed at wider intervals than has been the practice with the relatively soft asbestos composition boards. Asbestos-cement boards, on the contrary, are also dense and stiff, so screw spacing with Masonite very nearly follows asbestos-cement practice. Probably fewer screws need be used with Masonite than with asbestos-cement because Masonite is thin and light by comparison.

The details in the drawing show that most changes in direction were at right angles. This was purposely planned, of course, because none of the "substitute" materials lend themselves readily to easy flow, curved transitions or fittings and can, only with difficulty, be self-supporting curves. The board must be cut for flat panels and the metal connectors are easiest to apply when used in the flat.

On this job there were many changes in direction, so the 90-degree elbow shown in a detail was adopted to simplify fabrication and erection. To obtain less friction, each 90-degree turn was equipped with Nyland-made duct turning vanes

(*Continued on page* 149)

"Careystone" (Asbestos-Cement) With Metal Connectors

Narowetz Heating and Ventilating Co., Chicago, Erectors

A CONSIDERABLE volume of reconstruction might be undertaken today, many contractors believe, if obsolete or inadequate ventilating systems could be revamped for modern comfort conditioning using equipment from the old installation as permitted by L-41. But very frequently there is not enough usable metal from the old ducts for a new duct system. Such was the case in the Valentine Theatre, but by using "substitute boards" almost no new metal was required, but the completed system leaves little to be desired. This description shows and explains how the work was handled.

FOR many years one of Toledo, Ohio's, best known entertainment and cultural centers has been the Valentine Theatre, constructed in the era (before priorities) when lavishness in construction materials and furnishing was the criterion of elegance.

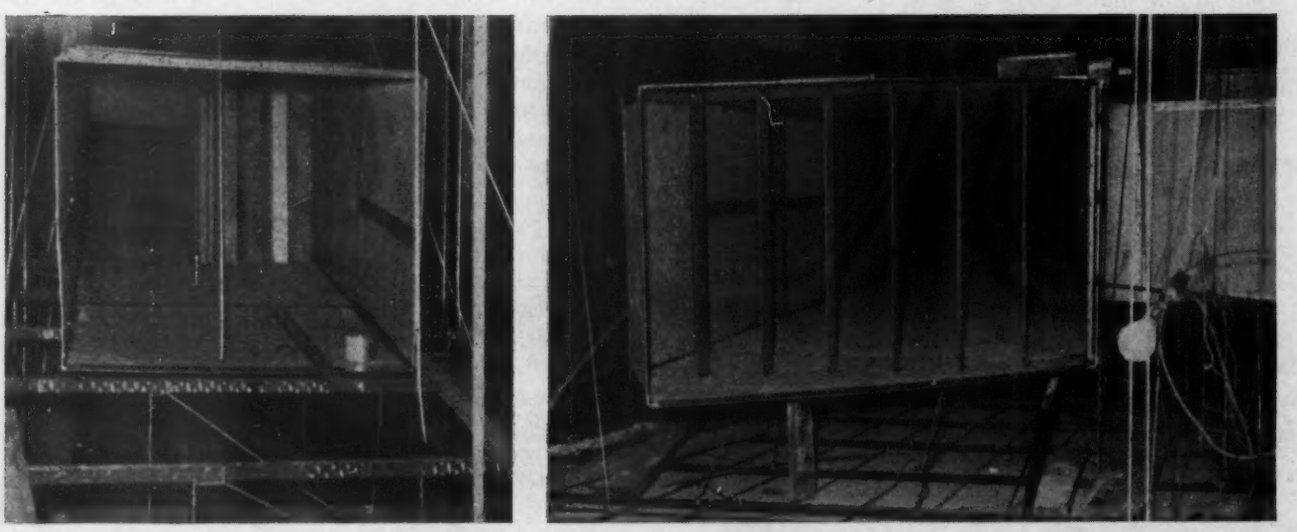
Recently a renovation and reconstruction program was undertaken, a part of which removed practically everything inside the exterior walls to provide a more "intimate" theatre according to today's vogue. A part of this reconstruction program scrapped the old ventilation system and substituted a new air-conditioning system. The compressors to be used were not new but were taken from the old system.

But the duct system of the old installation was not adequate from an air distribution standpoint; neither was it extensive enough for proper cooling distribution, so a completely new duct system was designed.

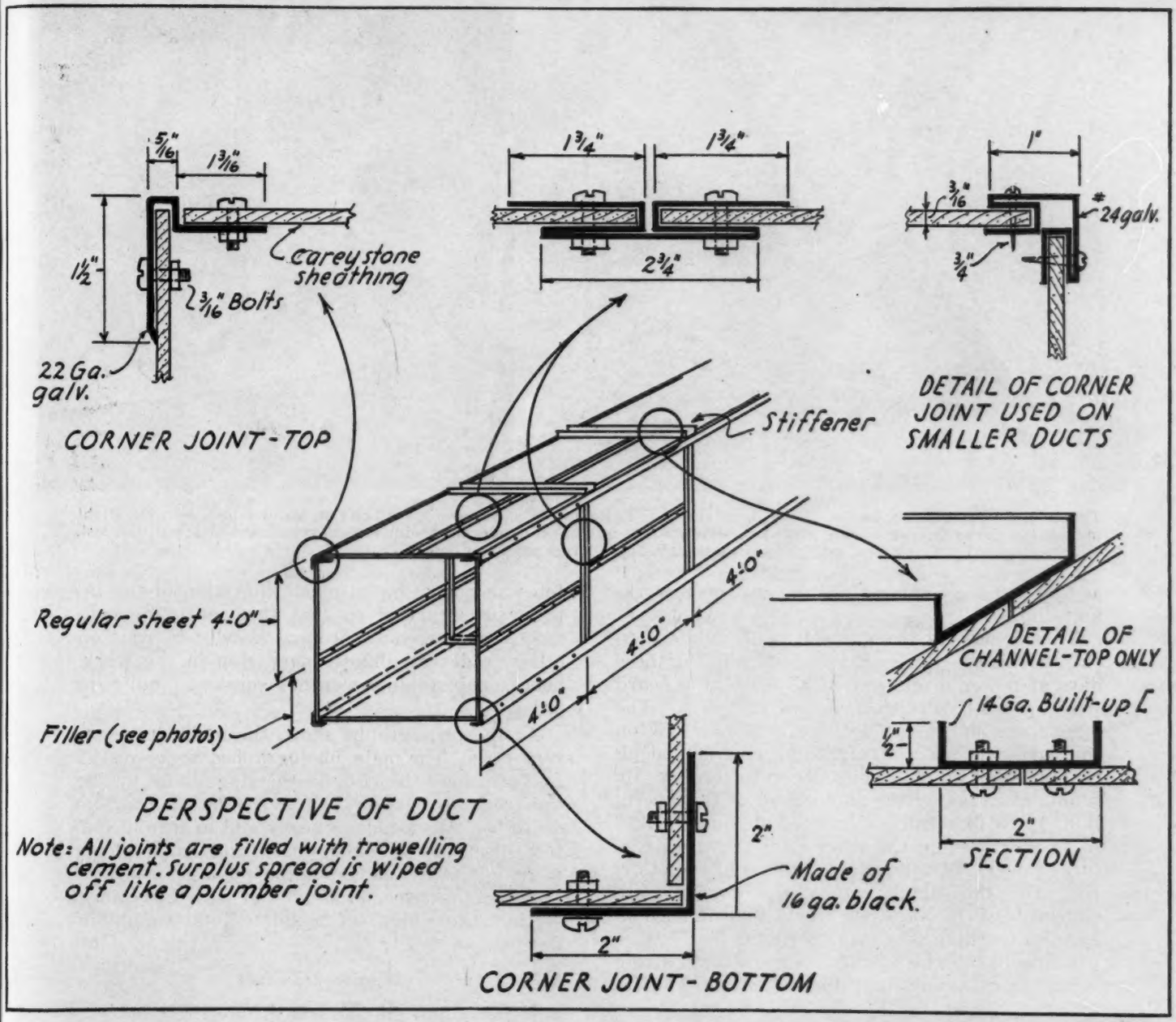
Metal being prohibited by WPB, the owners, the architect, the engineers and the ventilating contractor selected Careystone sheathing as a substitute material for the ducts.

The remodeling job was designed and supervised by Mr. Mason Rapp, architect, Chicago; the heating and air conditioning system was installed by Kroeschell Engineering Company, Chicago; the ventilating contractor was Narowetz Heating and Ventilating Company, Chicago.

When this installation was started, few contractors had had much experience with substitute



These large Valentine ducts show typical use of small pieces of board to save waste. Drawings following show design of the metal connectors. Note all turns are flat sides with turning vanes. These ducts are above the wire-suspended ceiling.



boards and necessary metal connectors, so the design shown was worked out on the cut and try system. Several ideas were tried and rejected either because the idea used too much metal, or was not rigid enough, or was too expensive to construct.

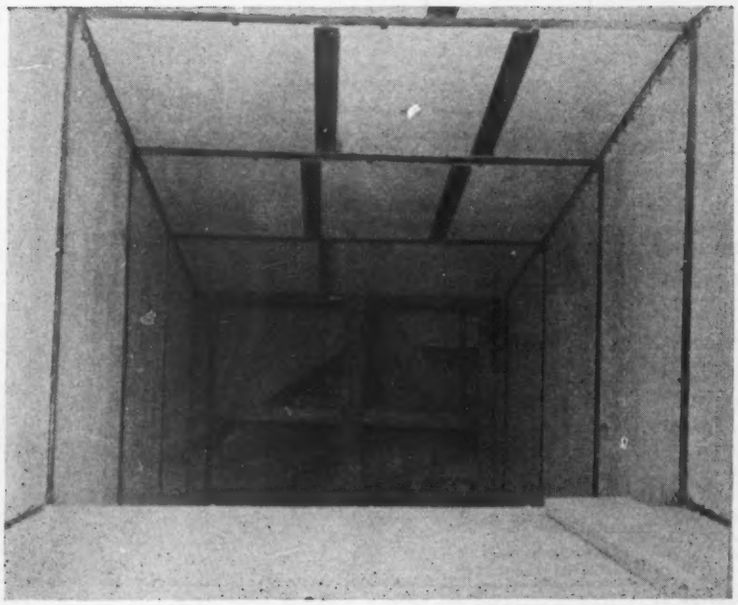
Mr. Louis Narowetz, Jr., had two substitute board contracts under way at the time so the connectors shown in the drawings and photographs are not entirely Valentine Theatre methods, but are the result of experience with the theatre and with the largest substitute board system ever installed in the country.

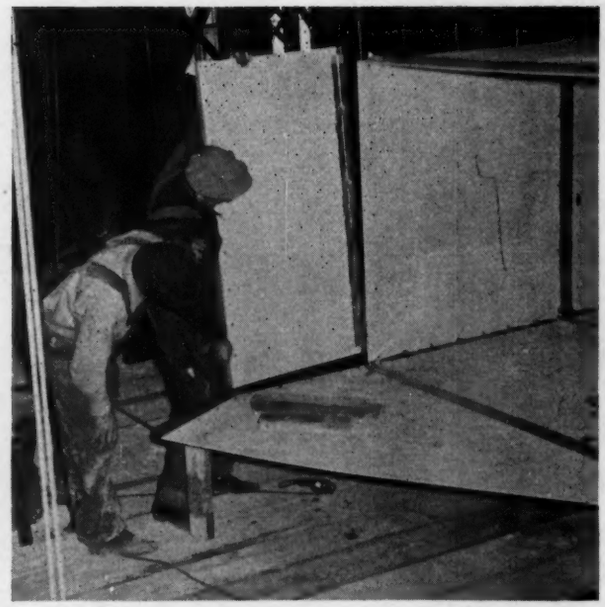
The Narowetz superintendent starting the job, Christ Lillie, with instructions to "develop methods satisfactory to the owners and the WPB" found customary metal working technique of little use; also that mechanics had never worked with substitute board and that before work could be put in full production, some new methods for fabricating the board had to be found.

The first thing discovered was that Careystone is a material almost concrete in texture—it couldn't be bent—it almost couldn't be cut. But in spite of the hardness of the material, the board possessed little strength in flexure so that metal connectors had to do double duty—provide a means of joining board edges together and at the same time stiffen the board.

Many interesting experiences were encountered. For example, one very important problem had to do with means of cutting the hundreds of sheets and further cutting the thousands of pieces of board required. It seemed that a power carborundum wheel should "walk through" such board, but in operation such wheels were apt to fly into "a thousand pieces" with a grenade effect if the wheel ran off of vertical or strayed from the straight edge. That was too dangerous to fool with.

Someone wandered into the job shop and related that if the board was clamped tightly in the brake along the cut off mark and the leaf raised, the board would break cleanly. The board broke





Left photograph again shows use of full panel sheets and also pieces and shows stove bolts on about 6-inch centers. Right photograph shows typical erecting procedure—bottom first on hangers; sides next with vertical connectors attached; top last, since top lies in upper corner piece (see detail).

as told, but the edge was ragged—not good workmanship.

This brings up the method finally adopted to cut the board. Somewhat unbelievable in these days of power machinery of all kinds, the board was cut with scratch awls or ice picks. The dimensions of the piece were measured out on the surface, then a straightedge was laid along the line and two mechanics began to scratch. By count, when taking the photograph of this operation, 12 to 14 scratches on one side and then 12 to 14 scratches on the other after the piece was turned over, cut the board cleanly and smoothly. But even this didn't satisfy the workmanship standards of the Narowetz crew—they finished an edge by touching it up with a coarse file.

It should be explained if this method of cutting seems extravagant, that the Valentine Theatre job was not rush—so much alteration of the interior was carried on that the ventilating contract was forced to proceed slowly; to wait on other trades at almost every step in the work, hence, painstaking workmanship was quite in order.

Required dimensions were marked on the sheet. Then a straight-edge was laid along the mark and about 12 scratches were made with an ice pick. Then the piece was turned over and another 12 scratches cut the sheet through cleanly.

As the photographs show, the main ducts are very large. The main photographed measures 92 by 78 inches; the riser in the stage is 66 by 72; the fresh air intake is 81 by 55 inches. So, because the Careystone is heavy and to save pieces, full sheets were seldom used and small pieces were joined as shown in the photographs. Because of the size and weight of each large duct section, the weight of metal to total weight of duct section is low.

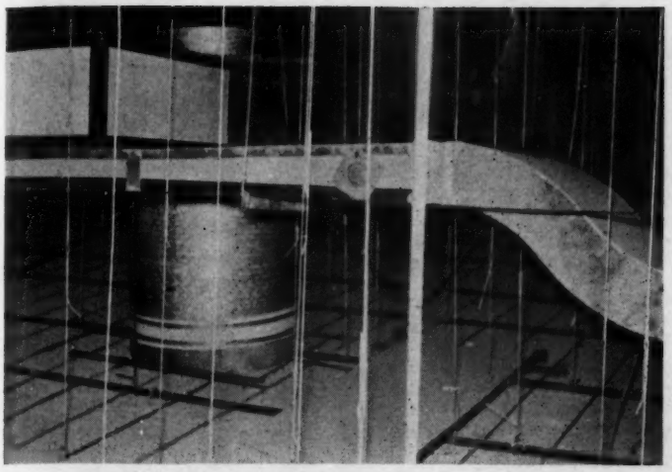
Erection Procedure

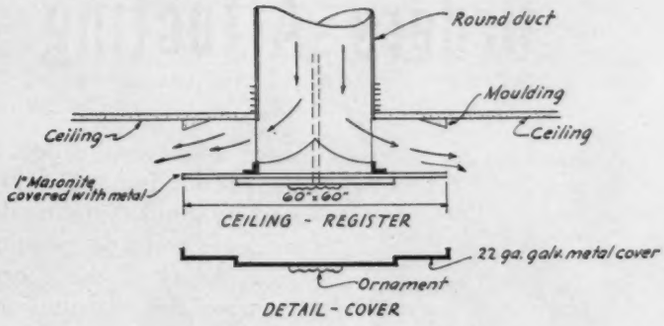
Metal connectors and board edges were held together by stove bolts. In the shop, holes for the bolts were punched in the metal with a Whitney punch. Then, in erecting, an electric drill made a hole through the board to pass the bolts. Usually, the large duct sections were erected by placing the metal bottom corner angles in the trapeze hangers and the bottom sheet was placed between the angles. Then the two sides were assembled in the vertical connectors and bolted and then the top special connector was slipped over the edge of the side sheet and bolted. As shown in the detail, the top sheet lays in the top edge strip.

The metal connectors were not made in the job shop except special pieces. Metal was formed in Chicago and delivered in 4-foot lengths to be cut to final length in the job shop.

Small branch ducts were put together in the same manner—assembling pieces instead of building up a full length and raising into position, principally to eliminate handling heavy sections.

There are several interesting details in the work. Air from the supply pipes is dropped straight down from the pipes through round metal

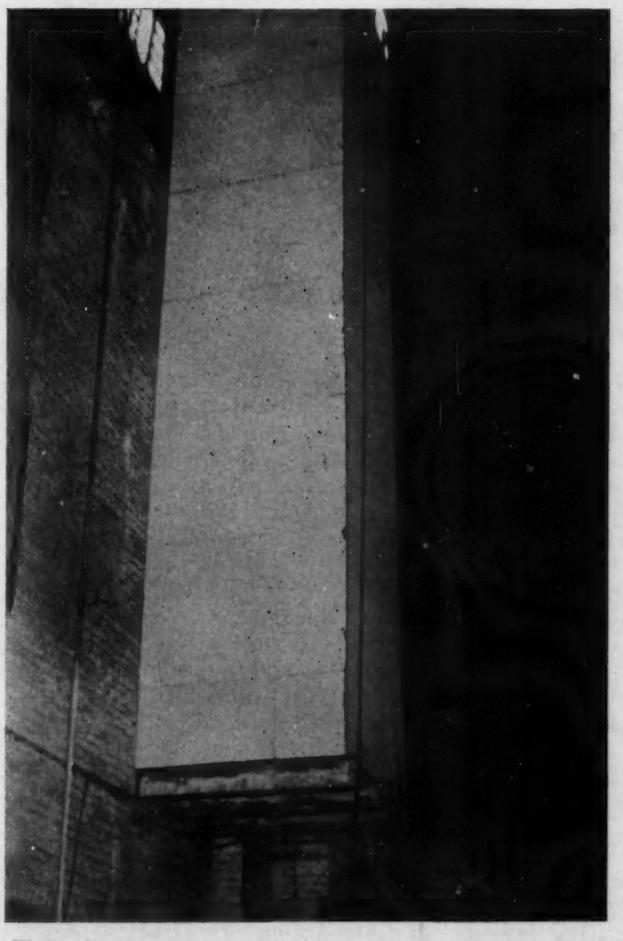




Photograph and sketch show the metal collar between ceiling plaque and substitute board branch duct above the balcony. Note very small branch which co ntinues was all metal (permitted).

necks which connect into special ceiling diffusers. The round hole for the neck was cut in the bottom sheet by scratching around a template.

The riser in the stage shown in a photograph is 66 by 72 inches and about 40 feet high. Assembly was the same as for the horizontal ducts, but to erect a steel scaffold was built outside the riser for one man to work from while another mechanic on a bos'n chair worked on the inside putting on the bolt nuts. When the riser was assembled, the outside was covered with two thicknesses of board insulation.



The stage riser was erected piece by piece inside a pipe scaffold with the "nut'er" on a bos'n chair inside. Right—Metal was used for housings of coils.

The angle iron hangers in which the ducts are cradled are suspended from the steel work by heavy wire; similar wire suspends the plastered ceiling, as shown in the photographs. Scaffolding (planks) was laid on this ceiling as a working platform for the mechanics.

All turns and elbows in the duct system are either right angled or semi-angled, but all turns and elbows have turning vanes made in Chicago and shipped to the job.

This installation verified one finding of the Narowetz company on costs of using "substitute" board. Installed duct work in small sizes runs 100 per cent higher in cost than metal; substitute board in the large sizes runs at least 50 per cent higher in cost than metal. This increased cost is due to the fact that the board per square foot of duct is more expensive than metal, but most of the higher cost is due to increased labor of fabricating and erecting. Labor in shop fabricating need not be much higher than metal, but

(*Continued on page* 149)

Orders Affecting Sheet Metal Work

There are several orders directly affecting the supply, production and delivery of materials ordinarily used by sheet metal contractors to fabricate items, products or to do exterior and interior sheet metal work. Most of these orders are allocation orders covering the distribution of material (M Orders), with the exception of orders stopping the production of metal signs, doors, etc.

L-29

(Metal Signs)

Issued—March 25, 1942
Amended—July 15, 1942
Application Form—For appeal, PD-500
Application—Made to local WPB office
Priority Rating—No rating involved

SUMMARY

DURING the period April 1 to July 1, 1942, no manufacturer was permitted to place in production or install any metal signs or any new sign accessories requiring more than 12 per cent of the amount of iron and steel which the fabricator used for the same purposes during the year ended June 30, 1941. Since July 1, no manufacturer is permitted to use any metal in the production of metal signs or sign accessories.

Any sign producer having materials in inventory should dispose of such inventory through use of Priority Regulation No. 13.

The order defines metals as all ferrous and nonferrous metals except the metals contained in metallic paint and defines metal signs where the weight of the metal constitutes at least 5 per cent of the total weight of the sign. The order defines signs as all devices having an area of more than 36 square inches, designed primarily to deliver or convey information or ideas. Signs, do not, however, include plates, tags, emblems, insignia and markers smaller than thirty-six square inches.

L-62

(Metal Household Furniture)

Issued—March 20, 1942
Amended—July 11, 1942
Application Form—For appeal, PB-500
Application—Made to local WPB office
Priority Rating—Not involved

SUMMARY

LIMITATION Order L-62, after June 30, 1942, prohibits manufacture or assembly of any metal household furniture or parts and also prohibits processing, fabricating, or assembling of any materials in metal household furniture.

The order defines metal household furniture as all furniture containing more than 5 per cent of metal in the net weight of the finished product, exclusive of the metal required for bolts, nuts, screws, etc., and includes under metal furniture such items as metal porch and garden furniture, chairs, tables, furniture, chests and drawers, kitchen cabinets, venetian blinds, all sorts of metal containers, but the order excludes cots and beds.

L-77

(Metal Windows)

Issued—March 25, 1942
Amended—No amendment
Application Form—Whatever form is applicable to the order or the windows
Application—Made to WPB
Priority Rating—According to the application order

SUMMARY

EFFECTIVE March 25, 1942, manufacturers may not produce any metal windows except in certain cases. It is permissible to manufacture windows for orders bearing preference ratings higher than A-2; it is permissible to manufacture windows from materials which were in inventory before March 25, 1942, if the windows so manufactured are for use in a project to which a preference rating has been assigned by Preference Rating Order P-18-d, P-55 or P-110.

After May 1, no person may accept delivery of material for manufacture into metal windows, unless delivery is on an order bearing a preference rating under the Production Requirements Plan.

Effective March 25, 1942, no manufacturer or distributor may sell or deliver metal windows except for orders bearing a preference rating of A-10 or better except for priority rated construction projects. Any project bearing a priority rating assigned by preference rating order P-19-d, P-55 or P-110 may be delivered and accepted.

The order defines metal windows as any metal sash, metal casement or metal framework of any type produced for installation in an opening constructed in the side of a building.

L-142

(Metal Doors, Frames and Shutters)

Issued—September 16, 1942
Amended—No amendment
Application Form—No forms involved
Priority Rating—No ratings involved

SUMMARY

LIMITATION Order L-142 restricts the manufacture of metal doors, door frames, or metal shutters and permits manufacture for only the following purposes:

1—For use in an airplane hangar where such door frame or shutter is constructed for special use;

2—For fire protection pursuant to an order bearing a preference rating and then only if the door is constructed of ferrous metal not exceeding 24 U. S. Standard gauge and where the total weight of the metal in such door, frame or shutter shall not exceed by more than 10 per cent the minimum total weight of metal called for by the specification of the National Board of Fire Underwriters for Fire Protection Purposes in the construction of the lightest weight metal door or shutter permitted by such requirement in the site within the building where this equipment is installed. L-142 also permits the manufacture of metal doors, frames or shutters for repair and maintenance when a Preference Rating of A-10 or higher has been assigned to the order or the contract calling for the equipment.

The order defines a metal door as any door which, exclusive of essential hardware, is made in whole or in part of metal. This would include Kalamein and fire doors.

M-9-C

(Curtailment of the Use of Copper)

Issued—May 7, 1942
Amended—August 7, 1942
Application Form—For appeal, PD-167 revised
Application—Made to War Production Board, Washington, D C.
Priority Rating—According to the particular product involved

SUMMARY

REVISED Conservation Order No. M-9-c, as amended, prohibits the use of copper and copper alloys in the production of most civilian items and curtails the use of copper in the manufacture of practically all products. The order covers scores of articles ordinarily manufactured of copper or copper alloy or using copper and copper alloy in the various parts and pieces. Most of these uses of copper do not affect our industry, but certain copper products and copper usage for protection are involved and are restricted in Order M-9-c as follows:

Under List A (the so-called prohibited list) no product in List A can be manufactured since March 31, 1942, using copper, brass, bronze or copper-base alloys. The articles in List A ordinarily used by our industry are certain types of air conditioning equipment; gravel stops and snow guards; heating and ventilating grilles; gutters, leaders, downspouts; expansion joints and accessories thereto; ornamental metal work; copper roofing and copper roofing nails; valleys and all roofing items; sheet, roll and strip copper for building construction; termite shields; ventilators and skylights; burial vaults.

Copper, which was in inventory before February 28, 1942, was prohibited from use in manufacture after June 15, 1942, unless the article is being made to fill an order with a preference rating A-1-k or higher or if the manufacture of the item had been specifically authorized by the Director General of Operations. Such special authorization had to be made on Form PD-426.

Frozen inventories of copper in all forms is handled under Priority Regulation No. 13, published in the September, 1942, issue of AMERICAN ARTISAN, page 27.

Until August 1, 1942, copper was permitted in articles purchased by the War Agencies, but this exemption expired August 1, 1942, so that there has now been added a "Military Exemption List" which permits the manufacture of articles needed for war use.

Copper Roof Repairs

An interpretation made in July permits the use of 25 pounds or less of copper or copper alloy to repair copper used on a building where the metal so used is to replace copper building material previously installed. Thus, a copper gutter could be repaired with copper providing 25 pounds of copper or less was required for the repair.

M-21-e

(Tin Plate and Terne Plate)

Issued—February 3, 1942
Amended—July 11, 1942
Application Form—No forms required
Priority—No priority involved

SUMMARY

SUPPLEMENTARY Order No. M-21-e as amended prohibits any person from making any product of tin plate or terne plate, except to the extent specified in Schedule A, appended to the order.

Among the types of tin plate prohibited are hot-dipped tin plate with a pot yield exceeding 1.25 pounds per base box; electrolytic tin plate with a coating in excess of ½ pound per base box; short ternes with a terne coating in excess of 1.3 pounds per base box; long ternes with a coating in excess of 4 pounds per base box.

Certain exemptions contained in the order specify that the restriction shall not apply to: (1) Roofing Materials or Furnace Pipe and Fittings material in inventory on May 16, 1942, to be sold or delivered for maintenance and repair purposes, regardless of rating, or on orders for defense houses; and, (2) materials in inventory which, on May 16, had been put into process or had been painted, lacquered or enameled.

Any person who possesses stocks of tin or terne plate and is prohibited from selling, using or delivering such material by Order M-21-e can file in duplicate with Iron and Steel Branch, WBP, Washington, D. C., an itemized list of inventory material, giving quantities, size, gauge and weight of coating. Iron and Steel Branch will attempt to dispose of this ma-

terial for the owner. The situation as it now stands is that tin-coated material is not available for furnace pipe and fittings unless the manufacturer or the contractor had tin plate in stock prior to May, 1942. A substitute widely used is mill-run, tin-plate black, which is a sheet without any tin coating, but has a finish presumed to be weather resistant.

L-13-A

(Metal Office Furniture and Equipment)

Issued—April 1, 1942
Amended—August 5, 1942
Application Forms—For appeal, PD-500
Application—Made to the local WPB office
Priority Rating—No priority involved

SUMMARY

LIMITATION Order L-13-A restricts production of metal office furniture and equipment including insulated filing cabinets, safes and shelving; also uninsulated cabinets, lockers, storage compartments, desks, counters or any equipment using more than 5 per cent by weight total metal in the finished product, exclusive of nuts, bolts, etc.

Insulated metal equipment may be produced by authorization of the Director General for Operations or for orders bearing a Preference Rating of A-2 or higher placed by the war agencies until November 1, 1942.

M-38-c

(Restrictions on Use of Lead)

Issued—January 10, 1942
Amended—April 6, 1942
Application Forms—No forms involved
Priority Ratings—No priority rating involved

SUMMARY

AS OF April 1, 1942, the use of lead or lead-base alloy in the production of certain commonly used materials is prohibited. These materials in our field are gutters, leaders, and ornamental metal work, roofing, skylights and windows, spandrels and solder.

Lead and lead-base alloys are permitted on orders bearing a minimum preference rating of A-1-j, and are permitted in certain industrial processes where no other material can be used, and for use in scientific and industrial laboratory equipment, or to meet underwriters' or government safety regulations.

M-43-a

(Use of Tin)

Issued—December 31, 1941
Amended—August 3, 1942
Application Form—PD-229
Application—Made to WPB, Washington, D. C.
Priority Rating—A-10 or higher

SUMMARY

EFFECTIVE April 1, 1942, no tin may be used in the production of items included in this order, among which are solder.

The order provides that no person may manufacture any solder having a tin content of more than 30 per cent by weight, excepting for solder to repair gas meters where 40 per cent of tin is permitted.

One general exception to the order relates to the manufacture of health supplies as defined in Order P-29; also in the manufacture of measuring, recording and control instruments; and to the retinning of any dairy implements as specified in this order, providing the tin so used does not exceed, during any calendar quarter, the amount used for such purpose in the corresponding calendar quarter of 1940.

As a result of this order, the so-called "war solders" with some silver content, or with a low-tin and high lead-content, have become mandatory for the sheet metal industry.

M-126

(Iron and Steel Conservation)

Issued—May 5, 1942
Amended—July 13 and September 3, 1942
Application Forms—PD-19 series; PD-3-a; PD-500; PD-437
Application—Made to local WPB offices
Priority Rating—According to the particular application order

SUMMARY

GENERAL Conservation Order No. M-126 prohibits any person from delivering or accepting delivery of any iron or steel to be used to make any item in List A of the order, and includes parts thereof. Production stopped on June 19, 1942. Assembly stopped August 3, 1942. This order stopped production of almost all consumer products and uses of iron and steel excepting on specific and rated orders.

However, the restriction as to putting in process, processing and assembling do not apply to the installation of an item or part by the ultimate consumer on his premises, when such processing or assemblying is incidental to the installation and is done on such premises. The restrictions do not apply to a person repairing a used article if the repair man does not use more than an aggregate weight of 25 pounds of iron or steel and if any putting into process, processing or assembling done by the repair man is only for the specific repair (drainage work excepted, see below).

The disposition of frozen or excessive inventories containing iron or steel is governed by Priorities Regulation No. 13.

Probably the most confusing result of Order M-126, has to do with gutters and downspouts. The official ruling on gutters and downspouts is as follows:

1—Any person who processes iron or steel to make gutters and downspouts is subject to the restriction and prohibitions of Order M-126; therefore, contractors making gutter and downspouts are subject to M-126.

2—Any person may fabricate gutters and spouting for installation on new dwellings, two stories or less in height, for two families, until December 5, 1942. Gutters and spouting for new multi-family dwellings of more than two stories and

(Continued on page 128)

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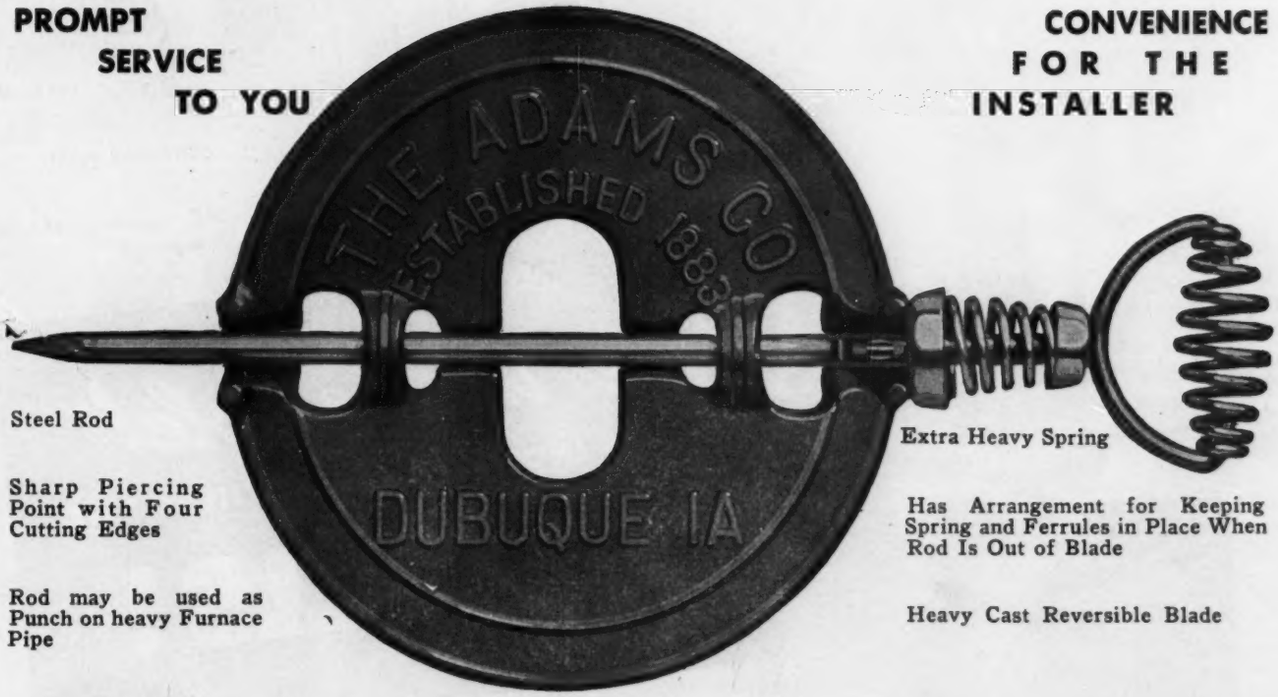

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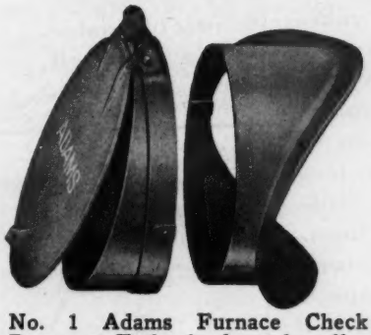

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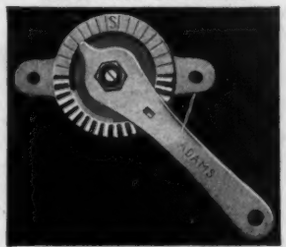

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Individual and Firm Taxes in 1943

By Joseph G. Dingle, C. P. A.
Ottawa, Illinois

ONCE again we have a new Revenue Act or, as it is commonly called, an income tax law. The Revenue Act of 1942, like its annual predecessors for some years, is a patched up affair. It is not a new Act but an amendment of the many times amended Act. Frankly, it can best be compared with a Packard car of 1938, which year by year has had replacements added from Buicks, Chevrolets, Fords, tractors and even coffee grinder parts. It was a good car years ago, and while it is still able to operate, it takes a very skilled mechanic to make it work. The Revenue Act of 1942 "fixes" up some of the earlier acts not heretofore properly settled in earlier laws. This new Act was finally approved by the President on October 21, 1942, and at the time of writing this article (December 6th) the Bureau of Internal Revenue has not yet released its regulations, setting forth its interpretation of the Act. It is, therefore, necessary to draw our own conclusions on several of the more or less clouded sections of the new Act.

This Revenue Act of 1942 makes history in several instances. It allows the lowest exemptions ever used in a Revenue Act, thereby calling for payments from the greatest number of citizens and residents ever to file tax returns. It assesses the highest tax rates ever imposed in the United States, starting with 18.4% on the first dollar of income over and above the personal exemption. It introduces a new tax, the so-called Victory Tax, which becomes effective January 1, 1943, and requires every employer to withhold out of every pay check a fixed percentage of all income in excess of $12.00 per week. Another innovation is the correction of several bad features of prior Revenue Acts and permits recovery of taxes paid by reason of those features in all years beginning after December 31, 1938.

Taxes on Individuals

The first serious change in the new law as it applies to individuals is the substantial reductions in the personal exemptions and credits. For comparison, we show the new and the 1941 allowances, thus:

	Under 1942 Act	Under 1941 Act
Single Persons (1)	$ 500.00	$ 750.00
Married Persons (1)	1,200.00	1,500.00
Family Heads (1)	1,200.00	1,500.00
Dependents (1)	350.00	400.00

(1) An amount not exceeding $250.00 in the case of a single person and $300.00 in the case of a married person or head of a family, of the compensation received from service in the U. S. military or naval forces, is allowed as an exclusion from gross income. This is in addition to the personal exemption noted above which may be applied in full to all income but does not apply to commissioned officers.

Normal Tax

The normal tax has been increased 50%, from 4% to 6%. This tax applies to net income less personal exemption, credit for dependents, interest on Government obligations and Earned Income Credit. Earned Income Credit remains unchanged from last year, being 10% of net income up to $3,000.00 regardless of its source, and 10% of earned income in excess of $3,000.00 but not in excess of $14,000.00.

Surtax

The major increases occur in the surtax rates. In the good old days, this tax applied on all income over and above a "cushion" of $4,000.00, but for several years there has been no cushion, this tax being assessed on every dollar of net income after deduction of the specific exemption and credit for dependents. To present the increase in this tax we here show the rates for the lower brackets for 1942 and 1941, as follows:

Surtax Net Income Exceeding	Not Exceeding	1942 Rate %	1942 Surtax on Highest Amt.	1941 Rate %	1941 Surtax on Highest Amt.
$	$ 2,000.00	13	$ 260.00	6	$ 120.00
2,000.00	4,000.00	16	580.00	9	300.00
4,000.00	6,000.00	20	980.00	13	560.00
6,000.00	8,000.00	24	1,460.00	17	900.00
8,000.00	10,000.00	28	2,020.00	21	1,320.00
10,000.00	12,000.00	32	2,660.00	25	1,820.00
12,000.00	14,000.00	36	3,380.00	29	2,400.00

As will be seen from the above, the rates have been increased 7% for each bracket up to $14,000.00. From $14,000,00 to $50,000.00 the rates have been increased 8%, and after a few brackets with 9% to 10% increases, the surtax rate on all income over $200,000.00 is a flat 82%. Last year income from $200,000.00 to $250,000.00 was taxed at 67%, gradually increasing to 77% for all income in excess of $5,000,000.00.

To further illustrate the application of the 1942 rates to individual income, we show for 1942 and 1941 the tax payable by a married man with no dependents (other than wife), also the tax payable by a single man. We use as net income the net income from business before deduction of personal exemption. For instance, net income of $2,000.00 to a married man in 1942 means taxable

income of $800.00 ($2,000.00 minus $1,200.00), whils the same income in 1941 meant taxable income of $500.00 ($2,000.00 minus $1,500.00). For a single man $2,000.00 net income in 1942 means taxable income of $1,500.00 ($2,000.00 minus $500.00) as compared with $1,250.00 ($2,000.00 minus $750.00) in 1941. The tax payable on net incomes before deductions is as follows:

Net Income	Married Man		Single Man	
	1942	1941	1942	1941
$ 2,000.00	$ 140.00	$ 42.00	$ 273.00	$ 117.00
3,000.00	324.00	138.00	472.00	220.50
4,000.00	538.00	253.00	692.00	350.50
5,000.00	758.00	383.00	932.00	490.50
6,000.00	1,010.00	553.00	1,192.00	660.50
7,500.00	1,412.00	788.00	1,622.00	945.50
10,000.00	2,194.00	1,333.00	2,432.00	1,520.50

The 1942 Revenue Act permits all the old deductions and some new ones. ALIMONY is now allowed as a deduction to the person paying it and it is taxable income to the recipient. This new feature of the Act will give relief to some taxpayers who have heretofore been paying alimony and getting no tax credit therefor. Such men are treated as single persons, yet were taxed on the alimony or separate maintenance paid to a divorced wife, who received the payments tax free.

Medical, Dental and Hospital Expenses

Another new deduction allowed individuals this year is Medical, Dental and Hospital Expense if such expense exceeds 5% of net income (computed without this deduction. The amount deductible is only the excess over 5%. Assume net income of $3,000.00 and Medical, Dental, Hospital Expense of $1,000.00. The amount deductible would be $850.00 ($1,000.00 minus 5% of $3,000.00, or $150.00). This new feature will prove quite helpful to those taxpayers who in 1942 and later years find a great part of their year's income consumed by extraordinary medical or dental expense.

State Sales Taxes

Individuals have for some years been paying State sales taxes, based on a percentage of the sales price of personal property, such as food, clothing, etc. This sales tax, being levied against the merchant, was not permitted as a deduction by the consumer, who, in reality, paid it. This unfair treatment has at last been corrected and for 1942 the individual is permitted to use as a deduction from his gross income such State sales taxes as he has paid during the year—where such taxes are treated as an addition to the sales price. While regulations have not yet been published, it is assumed taxpayers will be permitted to deduct for 1942 a reasonable estimated amount of such taxes. Each individual should determine as accurately as possible the amount expended for food, clothing and other tangible personal property subject to sales tax and extend the rate imposed by his state. For 1943 and subsequent years, each taxpayer should keep some record of such tax payments, thus being prepared to take proper deduction for this allowable deduction.

Non-Business Bad Debts

This is another new deduction, not allowable for 1942, but for years beginning after December 31, 1942, hence not discussed here.

Bad Debt Recoveries

Heretofore any recovery of a bad debt previously charged off was considered 100% taxable income in the year of recovery. Under the 1942 Act, such recoveries made since December 31, 1938, are not now subject to tax as income if in the year of the charge-off no tax saving was effected. In other words, assume a charge-off in 1932 of a bad debt of $100.00, and a net loss for the year of $250.00. Such a charge-off did not result in a tax saving in 1932. The recovery of this bad debt in 1942 would not be subject to tax. If, however, after the charge-off of the $100.00 the loss was only $50.00, the collection in 1942 would result in taxable income of $50.00, the amount which in 1932 resulted in no tax saving. If there were substantial recoveries of bad debts in 1939, 1940 and 1941 of bad debts charged off in years when operations showed losses, it will be worth while to look into the matter of filing claims for refund of taxes paid on such recoveries.

Net Operating Losses

The 1942 Revenue Act permits the carry-back of net operating losses for taxable years beginning after December 31, 1941, for two years. Not being operative for 1942, we will not discuss this here.

Capital Gains and Losses

Heretofore these capital gains and losses have been classified in three groups. This year there are two groups; those held for less than six months being called Short Term capital transactions, and those held for more than six months being called Long Term capital transactions. This section of the Revenue Act is quite complicated for a brief discussion here. We suggest calling in a tax consultant if you have any substantial profit or loss in capital assets. In fact, we recommend proper advice BEFORE entering into any transaction involving capital gains or losses.

Taxes on Corporations

Corporations are now, as last year, subject to four taxes on income, to say nothing of the many other taxes, both State and Federal. Congress has not yet realized that a corporation, as such, is not possessed of the magic quality of making abnormal profits. Of course, we must admit that corporations, as such, do not vote, hence may be taxed to the extremes asserted by our Revenue

(*Continued on page* 156)

Warm Air Ass'n Winter Meeting

Above—Three-time president I. L. Jones and guest speaker Dr. A. C. Willard at the anniversary luncheon gave a thumb-nail review of the association's 25 years of research. Right—President H. S. Sharp and Managing Director George Boeddener wrapped 1942's industry problems into a neat package to explain why the industry is in its present position.

MANUFACTURERS of furnaces and heating accessories, together with jobbers and contractors, gathered in Cleveland, December 8 and 9, to attend the 25th annual convention and silver anniversary of the National Warm Air Heating and Air Conditioning Association, hoping to take away from the meeting some word from Washington officials which could be used to plan 1943 manufacturing and sales activities. This hope was not satisfied, but they did take away a better idea of what is in the making for post-war planning in the construction field and they did gather from Managing Director George Boeddener's address a summary of the problems which have confronted the industry during 1942 and a definite idea as to just why no definite program has been forthcoming from Washington.

President Harold Sharp, in his opening address, emphasized the problem facing manufacturers and fabricators in obtaining war contracts to fill vacancies in production schedules brought about by curtailment in customary manufacturing processes. President Sharp pointed out that many manufacturers have not been able to obtain war work comparable to customary manufacturing operations and as a result many manufacturers have become discouraged. This idea President Sharp left with his audience:—

Our industry is in a difficult position; we want war work, but we can't be too choosy. If manufacturers cannot find work which corresponds with their customary manufacturing, then it will be increasingly necessary for manufacturers to accept any and all kinds of contracts no matter how foreign such work may be from the usual factory operation. Manufacturers must be willing to gamble both financially and productively. They must be willing to accept work which at first glance seems completely foreign to their practices, and in taking this work they must be willing to purchase or loan equipment not in the shop and to train their men in operations which the manufacturing forces have never undertaken previously. There is much more war work to be done provided the manufacturers will take this gamble.

1942's Problems

Managing Director George Boeddener's address to the association was probably one of the best analyses of the problems confronting the industry which has ever been presented. From 18 months' intimate contact with Washington bureaus and officials, Mr. Boeddener declared that many members of the association may feel that the association effort has not been of much benefit, since all during 1942 markets have been restricted again and again. The only encouraging feature of the 1942 situation is that by and large Washington admits that the warm air heating industry is an essential civilian industry and that when it comes to a choice between heat or pleasure, heat will be provided for.

On the very confusing subject of concentration of furnace manufacture, Mr. Boeddener explained that the association has gone on record several times that the furnace replacement market must have 200,000 units per year, but Mr. Boeddener explained that he has been told that one branch of government has estimated that the furnace industry replacement market requires only 56,000 units per year. In refutation to this 56,000 furnaces per year volume, Mr. Boeddener pointed out that the government's own figures indicate that the life of a gravity or forced air furnace, whether coal, gas or oil, is 20 years, and that in 1922 the industry produced 320,000 furnaces, so in 1942, 20

OFFICERS FOR 1943

President—Harold S. Sharp, Henry Furnace and Foundry Co., Cleveland.

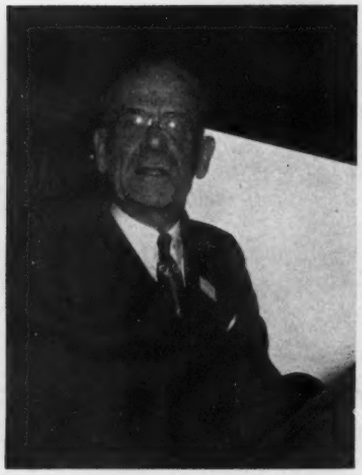
1st Vice President—Harold C. Mueller, L. J. Mueller Furnace Co., Milwaukee.

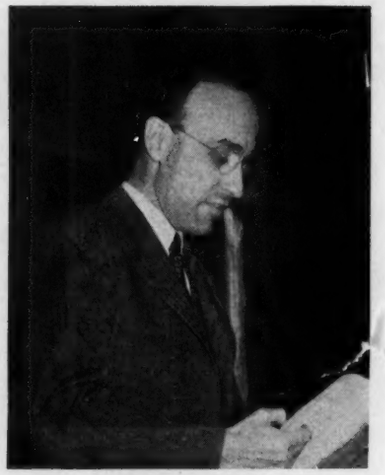
2nd Vice President—Frank Mehrings, Meyer Furnace Co., Peoria, Ill.

Managing Director—George Boeddener.

Directors for two years—C. A. Anderson, Agricola Furnace Co., Gadsden, Alabama; Ralph Blanchard, Hart & Cooley Mfg. Co., Holland, Michigan; Perl Miller, Lamneck Products, Columbus, Ohio; A. Rybolt, Rybolt Heater Co., Ashland, Ohio.

Director for one year—A. R. Wrieden, Lennox Furnace Co., Syracuse, N. Y.





Left to Right—Richard N. Jones (Architectural Forum) said post-war housing is likely to be large scale projects, low cost, and aimed at the $2,000 income family. Allen Williams has written a history of the association—he read excerpts at the anniversary session. S. Morris Livingston (Dept. of Commerce) believes we may end the war starved for comfort articles but fat with money — an ideal condition for inflation.

years later, these 320,000 furnaces should be replaced.

The association has also pointed out on numerous occasions that in the final analysis, the number of furnaces which must be produced for replacement will be determined by home owners and not by the government or by the furnace industry. Furthermore, that concentration of the furnace industry seems unlikely to bring any direct benefit to the war effort because one reason for concentration is to save labor in critical labor areas, but the furnace industry employs only a comparatively small number of workers, many of whom are negro workers or other unskilled men. Furthermore, a much greater increase in overall production could be obtained by increasing the average work week from 43 to 58 or 56 hours. It is generally understood that Germany works 60 hours, Great Britain 56 hours, and Russia 66 hours, and our armed forces work 168 hours per week.

Mr. Boeddener also pointed out that if the several million warm air furnaces now in operation in the country are to be maintained in efficient condition, it will be necessary for experienced furnace mechanics to service these units. Dealers generally throughout the country are losing men to the draft and to the war industries and many thousands of shops are now operating solely under owners' labor. This condition is also true for men servicing oil-fired equipment, stoker-fired equipment, gas furnaces, controls and blowers, etc.

Vice-President Frank Mehrings and Professor A. P. Kratz summarized the milestones in the 25 years of research.

To emphasize the falling off in furnace production during the first three-quarters of 1942, recently published Bureau of Census figures show that coal-fired gravity and forced-air units have dropped 33 percent in production, gas-fired gravity and forced air units 66 percent, and oil-fired gravity and forced air units 65 percent for the first three-quarters of 1942 as compared to 1941. In the third quarter, coal-fired units dropped 50 percent in 1942 compared to 1941.

A further difficulty arises from the fact that at the end of 1942 no one in the industry knows exactly the extent of jobber-dealer furnace stocks. We do know that there was a rush to buy furnaces after Pearl Harbor, continuing through the first part of the year, with between 600 and 700 stocking furnace jobbers and 15,000 furnace dealers in the United States holding stocks of furnaces at the beginning of 1942. If we add the Bureau of Census sales figures of 194,643 units during the first three-quarters of 1942, it is easy to see that there was a very large backlog of stock on hand for the first part of 1942. By contrast, shelves will be bare at the start of 1943 and there will be no backlog of jobber or dealer stock. This being the case, the association believes that 200,000 units for replacement during 1943 is not an extravagant request.

During 1942, said Mr. Boeddener, the association has taken quite an active part in post-war planning and has made some rough studies of the potential post-war furnace markets. One market which seems destined to provide activity after the war is the 16,000,000 stoves and circulating heaters installed in homes in the United States. Of this number there must be millions of well kept stove-heated homes in cities and elsewhere with electrical power connections or will have electrical power, so that these homes are a logical market for forced warm air heating after the war. In addition, millions of these stove-heated home owners will have, in the aggregate, a large amount of cash or readily convertible securities and will want to spend this accumulated surplus in improving their housing. The association believes that improved automatic forced warm air heating and attractive gravity units to provide comfort, convenience and health will have a strong appeal to these home owners who wish to improve their premises.

As to what type of unit the industry will offer after the war, it is possible that the furnace industry will do the same as the automobile industry, which has already announced that the first post-war automobiles will probably be 1942 models, because dies are already in existence. While these existing models are being sold, the industry will be tooled for the completely new cars we are expecting.

FOR OUR ARMED FORCES

INDUSTRIAL AMERICA HAS PLEDGED

ALL-OUT AND EVER-INCREASING PRODUCTION

FOR OUR ARMED FORCES

—THAT THEY MAY QUICKEN THE DAY OF VICTORY

—THAT THEY MAY RETURN IN SAFETY

—AND THAT THE WORLD MAY BE ASSURED

OF A LASTING PEACE

If the warm air industry is to sell these home owners on the advantages of improved heating, it will be necessary for the industry to undertake a tremendous educational job. The association believes that the objective can be reached if the industry will (1) enlarge our research program; (2) continue to improve our installation codes; (3) improve the general design of furnaces and accessories, leading to compactness and packaging; (4) educate dealer and distributors in better sales methods; (5) encourage more courses in heating and air conditioning in universities and colleges; (6) undertake a very extensive advertising, publicity and merchandising campaign to reach every home owner in the country.

The association believes that the postwar market will consist, roughly, of 300,000 gravity and forced warm air units to satisfy replacement and modernization market; 350,000 furnaces for the new home market; and 240,000 furnaces for the present stove-heated market. This makes a total of 890,000 furnaces per year.

As to criticism from certain government sources on the inefficiency of present-day gravity and forced warm air furnaces, Mr. Boeddener pointed out that the association has insisted continuously that government does not appreciate that furnaces are not manufactured for a specific fuel in the case of coal and that one furnace may be distributed to home owners who will burn coke or hard coal or highly volatile bituminous coal, or coking coals, etc. The fact that present types of furnaces do a very excellent job under these diverse conditions is an indication that the industry's present method of design and rating furnaces is conservative as well as progressive.

The Post War Market

"After the Bombers Come the Builders" was the general subject of the address of Richard N. Jones, Western Advertising Manager, The Architectural Forum, who undertook the task of explaining to the convention just what is in prospect in the way of post-war housing construction. Mr. Jones explained that today there are more than 40 organizations definitely at work on the problem of finding work for 27,000,000 workers who will be no longer in war work at the conclusion of the war. Under normal conditions the building industry contributes approximately 7 percent of our total national income and contributed 8 percent during the worst years of the depression. These 40 organizations working on post-war planning have assigned to the construction industry $10,000,000,000 of work each year after the war. This $10,000,000,000 will be roughly divided 50 percent for residential construction and 50 percent for commercial, institutional, and industrial construction. Furthermore, after the war, at least one-half of present housing will be in need of repair or remodeling. Since 25 percent of our 8,000,000 homes are over 15 years old, it is estimated that at least 7,000,000 homes need replacement.

The post-war housing construction program is expected to be revolutionary in scope. For 150 years the building industry has erected new houses, mostly for the top 10 percent of income families. We have never built for the low income families. The construction industry is expected to continue to build more or less present standard types of housing for this top 10 percent income group, but after the war there will be a completely new mass-housing production program designed for housing the low-income groups. Twenty-five million families out of the total 29,000,000 families in the country have never had housing built specifically for their pocketbooks. After the war, the so-called middle group which can afford to pay $20 to $40 per month for housing will continue to constitute an important market for present-day houses and equipment, but the big housing market will be for families who can pay under $20 per month for housing.

This market will require new types of construction and it is expected that the construction industry must accept and develop mass production of houses; acceptance of the principles of prefabrication construction; a broadening of the present tendency toward very large multi-family housing projects; and greatly enlarged housing construction organization, both financing and building. Housing will be constructed as large projects by the insurance companies, financial institutions, and by very large heavy engineering construction firms.

In general, up to now, prefabricated houses have been Sunday supplement publicity, but prefabrication is sound in principle and seems to be one of the good answers to housing for the low income groups. So far as heating is concerned, prefabrication and low-cost housing will mean smaller units than we have built up to the war period and types of heating units of relatively low Btu capacity. Package units will be standardized. Radiant heating shows real promise for all sizes of house construction. Mechanical warm air heating, as a package proposition, will probably come into being at the insistence of the prefabricated house builders. These mass market building projects will mean the sale of heating equipment directly from the manufacturer to the builder or financial agency and not through the jobber and dealer as heretofore. According to the business cycles, the next big building boom is due in 1943; these business cycles being approximately 18 years and two months between peaks; but next year may be delayed somewhat by the war. In any event, it looks like a revolutionary and a very big market for all manufacturers of equipment going into housing.

Prospects for 1943

Ronald Allwork, Deputy Chief, Plumbing & Heating Branch, War Production Board, and Morgan N. Johnston, Acting Chief, Production Development Section, Plumbing and Heating Branch, presented a summary of what Washington agencies expect in the way of future developments in the warm air heating and construction industries. Many of the difficulties which caused so much consternation in 1942 are due to the fact that War Production Board followed the idea that action and not normal activity is the way to win the war. This drive for action has caused many mistakes, but mistakes, in the opinion of WPB, are better than hesitancy or wishy-washy, inactive progress.

In explanation of the long delay in deciding whether to concentrate the furnace industry or not, Mr. Allwork explained that concentration was first suggested in late May or early June. On July 1st, concentration of the furnace industry in principal was approved by Nelson and WPB and the broad principles of the order were laid down. These broad principles were that all plants would be favored to continue in operation making furnaces; that plants in non-critical labor areas would be favored; plants to minimize cross-hauling of finished product would be favored; power supply must be adequate; there must be adequate warehouse space

(*Continued on page* 138)

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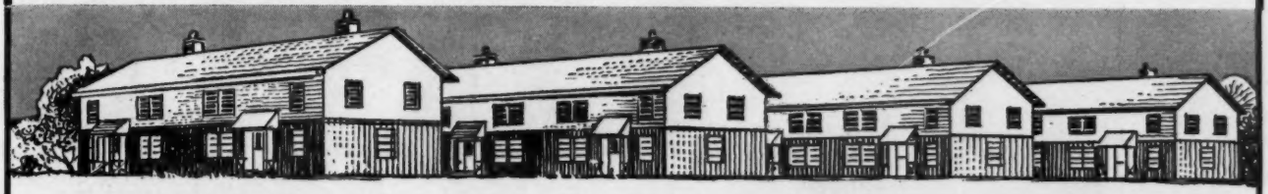

AIRSTREAM Blower Wheels use less steel per CFM air delivery. Weigh less, yet more rigid due to patented construction and channel-shaped end rings.

You save because of our savings in steel and labor, which we pass on to you. Patented hub construction supplants heavier and more expensive cast iron or screw machine hubs.

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FURNACE Manufacturers—Let us prove how you can make a further saving in cost by building blower assemblies in your own sheet metal shop. Why pay someone else's overhead and profit on a product you can manufacture yourself? Morrison engineers will furnish you complete information upon request.

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Bayley "CUSTOM BUILT" FANS

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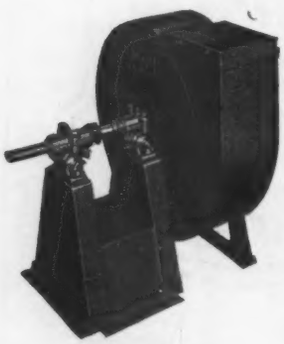
Overhung blast wheel and pulley, regularly equipped with roller bearings.

Bayley "Ex" Exhaust Fans, custom built to meet the individual needs of industry, are without a doubt the most advanced, efficient and durable fans available. Built in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM capacity with pressures up to 15" W.G., they cover a wide range of applications in all types of industrial and war plants. Bayley "Ex" Fans are designed and constructed to operate faultlessly under the most adversed conditions . . . they can be made explosion proof . . . non-ferrous . . . and are produced in stainless steel to handle high temperature gases up to 1600° F. Bayley Blowers give assurance of lasting, trouble-free service . . . and will do your specific job better. Investigate their possibilities for your particular purpose NOW!

TYPICAL USERS OF BAYLEY PRODUCTS



Arrangement No. 1
Overhung blast wheel, pulley drive, regularly fitted with ring oiling bearings. (ball bearing optional)

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The American Monorail Company
Armour & Company
The Borden Company
Briggs & Stratton Corporation
Carnegie Illinois Steel Corporation
Chrysler Corporation
Cleaver-Brooks Company
The Day Company
Despatch Oven Company
Diamond Iron Works, Incorporated
And the Mahr Mfg. Company Division
The Dow Chemical Company
Dravo Corporation
Ford Motor Company
Harnischfeger Corporation
The Heil Company
Marquette Cement Mfg. Company
Nash Kelvinator Corporation
The Pennsylvania Railroad Company
Phoenix Hosiery Company
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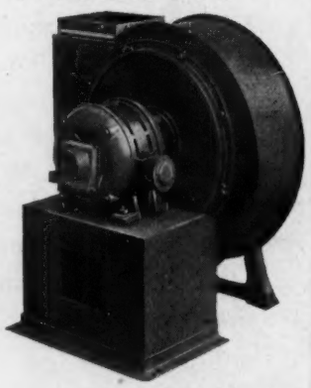


Arrangement No. 4
Housing, wheel and motor subbase only for direct motor drive.

CONSULT US ON YOUR ENGINEERING PROBLEMS

BAYLEY BLOWER CO.

1817 SOUTH 66TH STREET MILWAUKEE, WISCONSIN

P-110

(*Continued from page* 64)

watch to see that the required heating, plumbing and other mechanical requirements using critical materials do not exceed his $800 total permissible cost. The contractor receiving the order for the new heating system orders the furnace and fittings from his supplier or manufacturer by putting on the order blank the simplified certification under PR No. 3 and assigns . imself the A-5 rating, which P-110 carries.

◆

L-79

(*Metal Plumbing and Heating Equipment*)

Issued—May 23, 1942
Amended—August 11, 1942
Application Form—PD-423
Application—Automatic certification
Priority Rating—No priority rating involved

SUMMARY

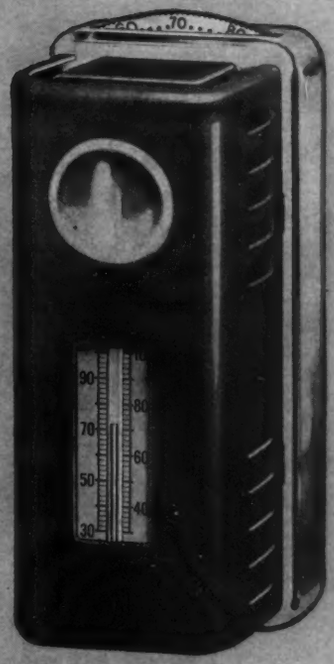
LIMITING Order L-79 has been popularly known as the "New Heating Equipment Freeze Order." States that no person may sell or deliver any *new* metal plumbing or heating equipment to an ultimate consumer unless the sale or delivery fulfills one of several exceptions, as listed in the order.

Any item of new metal heating equipment can be sold if it costs no more than $5 under Order P-84. New heating equipment may be sold if the order bears a preference rating of A-10 or better. Certain types of organizations are permitted to buy. New heating equipment may be sold if the purpose of the new equipment is to convert existing oil-burning or gas-burning equipment to coal-burning equipment. The sale meeting the above exceptions may be made if the seller obtains from the purchaser a certification specifying that the equipment is required to complete a structure permitted under Order L-41 or if the buyer will give to the seller a certified statement that the heating equipment is to be placed in a building where no other type of heat has ever been used.

L-79, at the time of issuance, was an interesting order because it prescribes certain permissible operations by not mentioning the equipment specifically. For example, gas furnaces, forced air furnaces, stokers, blowers, motors, and other accessory items were not mentioned in the revision to L-79. Hence, these items could be sold, excepting where other orders apply.

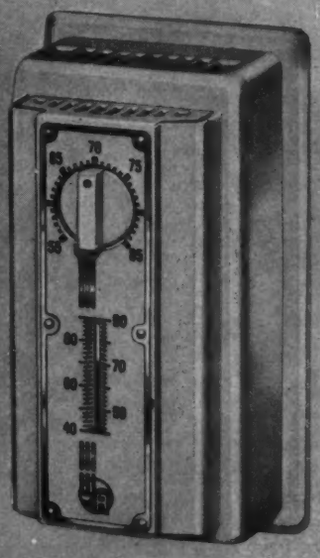
For the purpose of this summary, therefore, it can be listed that gas furnaces are restricted by Order L-31; oil furnaces are restricted by Order L-56; furnaces of all types are restricted by Order L-22; blowers are now restricted as to sale by Order L-123 (the Industrial Equipment Order); stokers are currently controlled by Order L-75; oil burners are currently controlled by Order L-74; registers and grilles are currently controlled by Order M-126; humidifiers are also controlled by M-126; controls are currently under no limiting or restricting order from our industry, but are controlled by other orders in the bi-metallic and motor field; filters are still unrestricted; pipe and

WHITE-RODGERS THERMOSTATS



White-Rodgers Series 150 Thermostats are being extensively used in War Plants, Naval Stations and Army Camps for the control of unit heating and cooling equipment. The reliable performance of these heavy-duty line-voltage thermostats is due to exceptionally sturdy construction plus the time-tested accuracy of the Hydraulic-Action principle of temperature control.

HYDRAULIC ACTION CONTROL

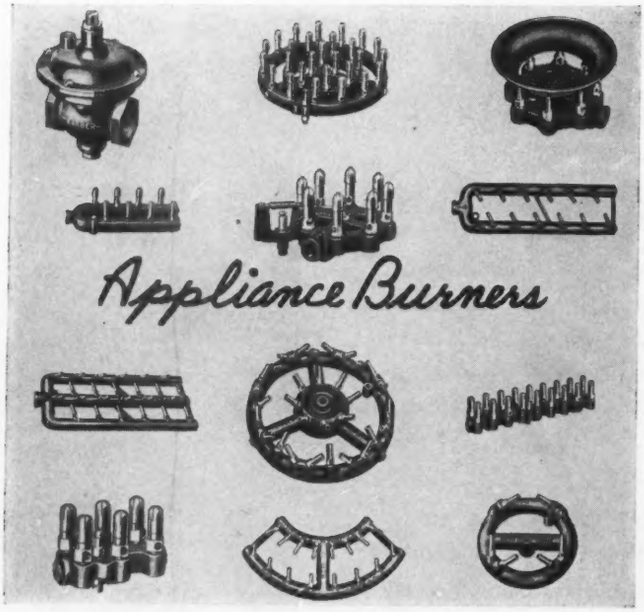


White-Rodgers Series 180 Thermostats are widely used in similar military and naval installations where lower current ratings are permissible. An improved type bimetallic element, extremely sensitive to temperature changes, operates a double-contact switch mechanism housed in a protective steel case.

WHITE-RODGERS ELECTRIC CO.

Controls for Heating • Refrigeration • Air-Conditioning

1215a CASS AVENUE • ST. LOUIS, MISSOURI



BARBER is Working for UNCLE SAM!

The facilities of this company are now mainly employed on essential war work. For those limited purposes for which our regular line of products is permitted, we shall continue to supply them. Later, when normal conditions are again restored, Barber will be ready to furnish its customary service to the trade on high quality Burners and Regulators.

The finest thing that can be said about any gas appliance is that it is Barber-equipped. Two hundred leading makers of gas appliances have standardized on Barber units for their products. Shown are just a few of scores of types of burners we produce, for equipment operated on natural, manufactured, Butane or bottled gas.

The famous Barber jets, as well as Barber principles of design, assure maximum efficiency, a point now of the very highest importance, since economy of fuel has become a matter of national concern. Let us co-operate with you in designing, laboratory testing and supplying the correct size and type of burner for the appliance.

We are gas burner specialists, and offer you our engineering and plant facilities for the development and manufacture of burner units for your specific purposes. Write for Catalog illustrating and listing many types of burners for Appliances, Gas Burners for Furnaces and Boilers, Regulators, etc.

THE BARBER GAS BURNER CO.

3704 Superior Ave., Cleveland, Ohio

BARBER *Automatic* JET GAS BURNERS

fittings—either galvanized iron, tin or black—are controlled by the Production Requirements Plan which allocates to the pipe and fittings manufacturers certain quantities of certain materials from which pipe and fittings can be made.

Thus it seems as though Order L-79 is now a superfluous order and about all that we can see that the order does is to permit the sale of breeching, new pipe, air ducts and fittings; it permits the manufacturer to sell new heating equipment to a wholesaler without any priority rating, but does not permit the manufacturer to sell to the ultimate consumer; and it permits the jobber to sell new heating equipment to a retailer without A-10 rating, and lastly it permits the sale of cooking stoves, heating stoves and water heaters to householders where no other equipment for cooking or heating purposes is available.

◆

M-126

(*Continued from page* 116)

commercial buildings do not fall within the restrictions of M-126.

3—It is not permissible to manufacture or fabricate gutters for use on single family dwellings.

4—M-126 does not restrict either fabrication or sale of gutters and spouting for maintenance and repair purposes, regardless of the type of dwelling or building.

5—There is no poundage limitation for the maintenance and repair of gutters and spouting which have been specifically excepted from the provisions of M-126.

6—No distinction is made between gutters and spouting which empties into a sewer and gutters and spouting which empties on to a lawn.

7—The fabrication of flat sheets into gutters and spouting is subject to the restrictions of M-126 no matter when or where the flat sheets were acquired by the fabricator.

M-126 was amended December 17, 1942, and again amended December 26, 1942, the December 17 amendment lifting the ban on the use of steel for certain essential civilian items. The effect of these two amendments has already been described under Order L-22 and L-22-a. No items which were originally banned in production, have been released for production excepting that under the amendment, Schedule C (certain items of stainless steel and certain items for the War Agencies) have been released for production.

◆

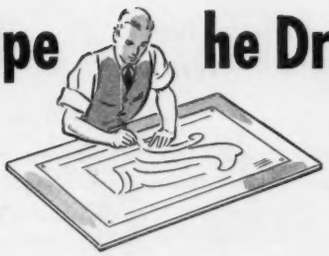
30,000 Trailers for War Workers

THE number of trailers used as stop-gap shelter in the war housing program now is being increased to approximately 30,000.

Herbert Emmerich, Commissioner of the Federal Public Housing Authority, National Housing Agency, announced November 12 that 2,500 trailers had been purchased in October and that applications had been filed with the WPB for 5,000 in November and 2,500 each in December and January.

Prior to October the Government had ordered some 17,500 trailers and more than 10,000 now have been delivered and occupied.

Any Shape he Draws



A UNISHEAR can Follow!

. . . and cut it FASTER than any other tool!

Wherever sheet metal departments are "beating the promise", you'll find Stanley Unishears on the job. They slice through sheets as fast as you feed, up to 15 feet per minute – follow any line accurately, straight, curved or angle – leave smooth, clean edges with no distortion. Plenty of power and ruggedness for tough production or maintenance use.

Portable models with capacities up to 12 U. S. gauge hot rolled steel. Stationary models to handle sheet metal up to 10 gauge. Stanley Electric Tool Division, The Stanley Works, 131 Elm St., New Britain, Connecticut.

TRADE STANLEY MARK

STANLEY UNISHEARS

The Electrically Driven Hand Shears

TOOLS ARE THE WORKER'S WEAPONS IN A TOTAL WAR. KEEP THEM ON THE JOB WITH PROPER CARE. . . .

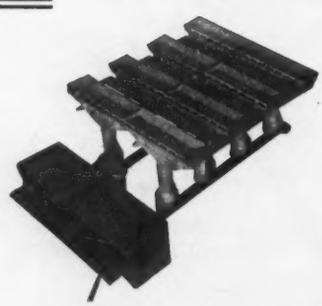
—JOHN ZINK—

"One Stop Burner Service"

CONVERSION BURNERS

SERIES "V" BURNER

Pre-Mix floor type. Ideal for heating plants, cantonments, churches, schools, apartments.



ADVANTAGES:

Absolutely noiseless, sizes for every boiler, easy-to-install, high capacity and efficiency, LOW COST.

SERIES "R" BURNER

Refractory type gas burner—ideal for installing in boilers with very low draft and small combustion space.

ADVANTAGES:

High heat transfer, higher ratings, no vibration, less draft loss.

No. 300 FURNACE BURNER

Shown with automatic controls—luminous gas flame type. Applicable to 98% of all domestic furnaces.

ADVANTAGES:

Low price, durable, easy to operate, no maintenance costs.

John Zink and his engineers also manufacture gas burners, oil burners and combination oil and gas burners for: domestic boilers, heating boilers, industrial boilers and power boilers. Special burners designed and manufactured for special purposes.

Write for Details Now!

John Zink Co.

TULSA, OKLAHOMA

New York - - Los Angeles - - Detroit - - Atlanta

Kruckman—New Fangled Furnaces

(*Continued from page* 55)

the only officials here who sturdily and optimistically champion the furnace-in-chimney.

Thulman, also has a good deal to do with developing the expansion which he calls heater-in-chimney, which is the combination of cook stove and chimney heater. The basic principle, of course, is the same. But in applying the principle, the adaptation has gone through changes. Thulman explains the device by sketching the three stages of its evolution. The first stage, two years ago, stemming from Inventor M. L. Mueller, was the furnace-in-chimney with the blower and the circulatory system. The second stage abandoned the furnace and substituted the cook stove. The combustion originated in the stove, which also was used for its primary purpose. After cooking the family meal, the heat rose up the flue and presumably heated the house. But apparently the heating was not so hot, at least not sufficiently so to satisfy Thulman and his co-experimenters.

Cook Stove-Furnace Results

Then, this year, they changed the primary intent of the combination. The combustion took place in the furnace, placed at what you might call the front, where the stove originally was found. The combustion was then by-passed to the stove, which is alongside the flue, and the heat thus diverted to the plates or oven with adequate temperature controls, is reported to do its cooking satisfactorily. An official test of record was made at Wayne University, in Indiana, with Pocahontas, bituminous coal. Dr. Eberson, the Assistant Professor of Home Economics, conducted the test. The pork chops were placed on the main plate at 1:11 p. m., and were sizzling at 1:20 p. m. At 1:30 p. m., they were moved to a cooler spot, and at 1:38 p. m., they were done. Meanwhile, at 1:40 p. m., the coffee was put on, and at 1:49 p. m., it was done. Eggs were fried on both sides in 2½ minutes.

Thulman reports that anthracite coal is not useful in the combination cooking and heating unit. Either bituminous or wood must be used. Both have given entirely satisfactory results. The combination unit requires only 30 pounds more metal than the furnace-in-chimney. The combination cook stove and furnace is cased in brick, ceramic tile, or precast slab. Some one has seriously suggested glass blocks, also. The preferred material seems to be brick. The combination stove and furnace, crated for shipment, weighs over 500 pounds. The furnace-in-chimney, ready to ship, weighs somewhere between 420 and 460 pounds.

Thulman does not claim that the combination unit is yet a finished job. Experiments are still in progress here, at the Bureau of Standards, and in the West. But Thulman seems quite certain that it has amply demonstrated it will stand up for practical use wherever it may be needed. The "bugs" that are now in process of being eliminated are not regarded as primarily important. It is apparent that Thulman and his associates are quite convinced they have found the cooking and heating combination for War housing that will survive criticism.

But it is impressed upon the reporter that after all War housing is temporary, and that War housing

★ *When you buy hand tools ask for* ★

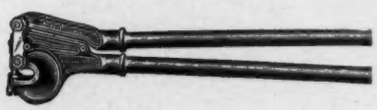
W. A. WHITNEY

No. 1 Punch

Capacity ⅜" hole through ¼" iron

Length 34". Wt. 23 lbs. Depth of throat 1⅞"

Punches and dies ⅛" to 9/16" by 1/64"



No. 2 Punch

Capacity 5/16" hole through ¼" iron

Length 23". Wt. 14 lbs. Depth of throat 1-11/16"

Punches and dies 3/32" to ½" by 1/64"

Channel Iron Punch

(A companion to No. 2 Punch)

Capacity ¼" hole through ¼" iron

Length 23". Wt. 17 lbs. Depth of throat 1⅞"

Punches and dies 3/32" to ½" by 1/64"

HERE'S WHY— .

There's a Whitney tool for *every* job, and *every* tool has these 6 Important Features—

- *Simple Design*
- *Sturdy construction for hardest kind of service*
- *Well distributed weight, making tool easy to handle*
- *Drop forgings of high grade alloy steel on all main parts*
- *Heat treated wearing parts*
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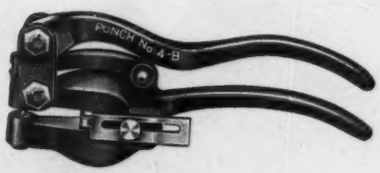
Extra punches and dies are of A-1 grade tool steel, expertly heat treated and tempered.

The Registered Trade Mark

which appears on all W. A. Whitney tools and extra punches and dies is the manufacturer's promise that they will give entire satisfaction and the utmost in service.

Illustrated are a few Whitney Hand Lever Punches. Write for our catalog giving full information on all sizes and styles, or ask your jobber.

Buy W. A. Whitney tools from your jobber



No. 4-B Tinner's Punch

Capacity ¼" hole through 16 gauge iron

Length 8½". Wt. 3 lbs. Depth of throat 2"

Punches and dies 1/16" to 9/32" by 1/64"

No. 6

Skylight, Ventilating and Tank Flange Punch (Especially adapted for button punching)

Capacity ¼" hole through 3/16" iron

Length 26½". Wt. 10½ lbs. Depth of throat 1¾"

Punches and dies ⅛" to 9/32" by 1/32"

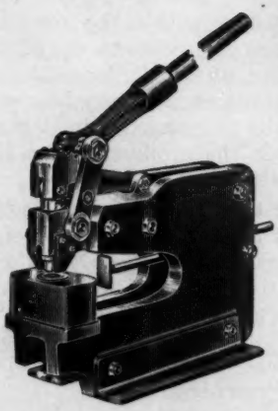
No. 8-B Punch

Capacity ¼" hole through ⅛" iron

Length 18½". Wt. 7½ lbs. Depth of throat 2"

Punches and dies 1/16" to 7/16" by 1/64"

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.



No. 92 Bench Punch

(Uses No. 91 punches and dies)

Weight 165 lbs. Depth of throat 10"

No. 91 Bench Punch

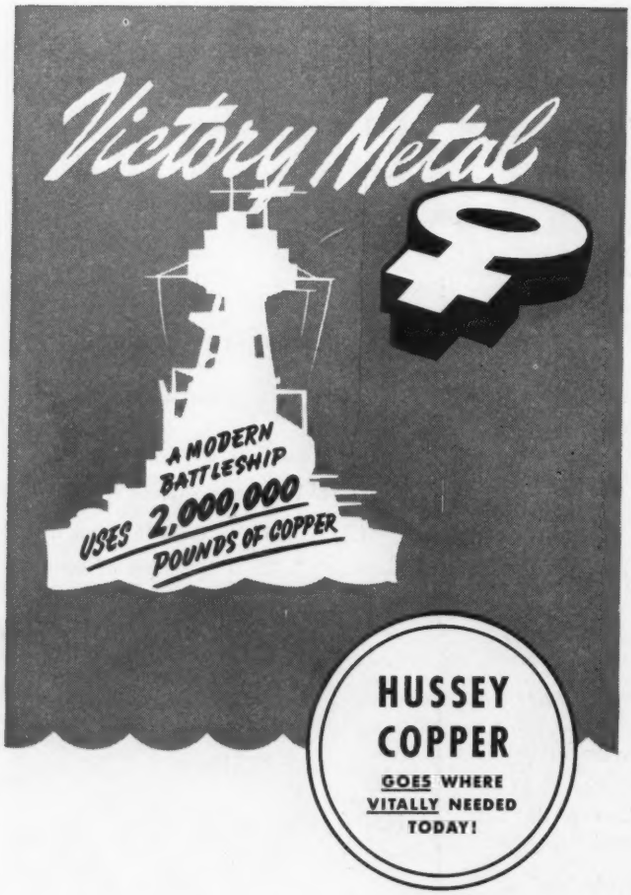
Capacity ½" hole through ¼" iron
¾" hole through 3/16" iron
2" hole through ⅛" iron

Weight 82 lbs. Depth of throat 5"

Punches and dies ⅛" to 2"

Channel Iron

2½" Flange x ¼" Web
Angle Iron
2½ x 2½ x ¼"



America's copper supply will determine the number of fighting vessels and other major war vehicles we can produce to defeat the Axis.

Today,—every available pound of HUSSEY COPPER is going into direct military orders —or essential war industry uses.

HUSSEY

C. G. HUSSEY AND COMPANY
(Division of Copper Range Co.)
Rolling Mills and General Offices: Pittsburgh, Pa.
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is not expected to be used for permanent post-war needs. The idea seems to be that similar reasoning should be applied to the equipment in War housing. Fundamentally you are impressed with the fact that the problem to be conquered is the need to make the equipment of materials which will satisfactorily substitute for metal for the duration. Others besides Thulman here absolutely reject the assertion that the furnace-in-chimney is wanting because there is combustion in the stack. They insist this, and other "bugs," have been licked.

Trick Heaters Face a Rocky Future

To summarize the situation: Thulman candidly declares he is the champion in Government for the stove-furnace combination. Apparently WPB Plumbing and Heating Division, the battleground in the past for many conflicts about a multiplicity of equipment types and problems, is now more definite and direct in its ideas and quite clearly regards the furnace-in-chimney, and the combination stove and furnace, chiefly as another version of the space heater. WPB apparently never has taken this combination equipment very seriously, and it would seem the final decision of FPHA to abandon the furnace-in-chimney and the stove-furnace more or less reflects the considered judgment of WPB Plumbing and Heating Division.

Wherever the pressure came from that prompted the rather unwilling adoption of the equipment apparently has disappeared and it is possible the disappearance of the Henderson regime from the Office of Civilian Supply plus the driving downrightness of the Eberstadt regime, may have something to do with it. It has been suggested that a study of the Boiler Order late in November may reveal the trend. Orders as formerly written invariably required one Amendment after another to make them work. Orders as now written are designed to present a clear, sharp, practicable chart for action.

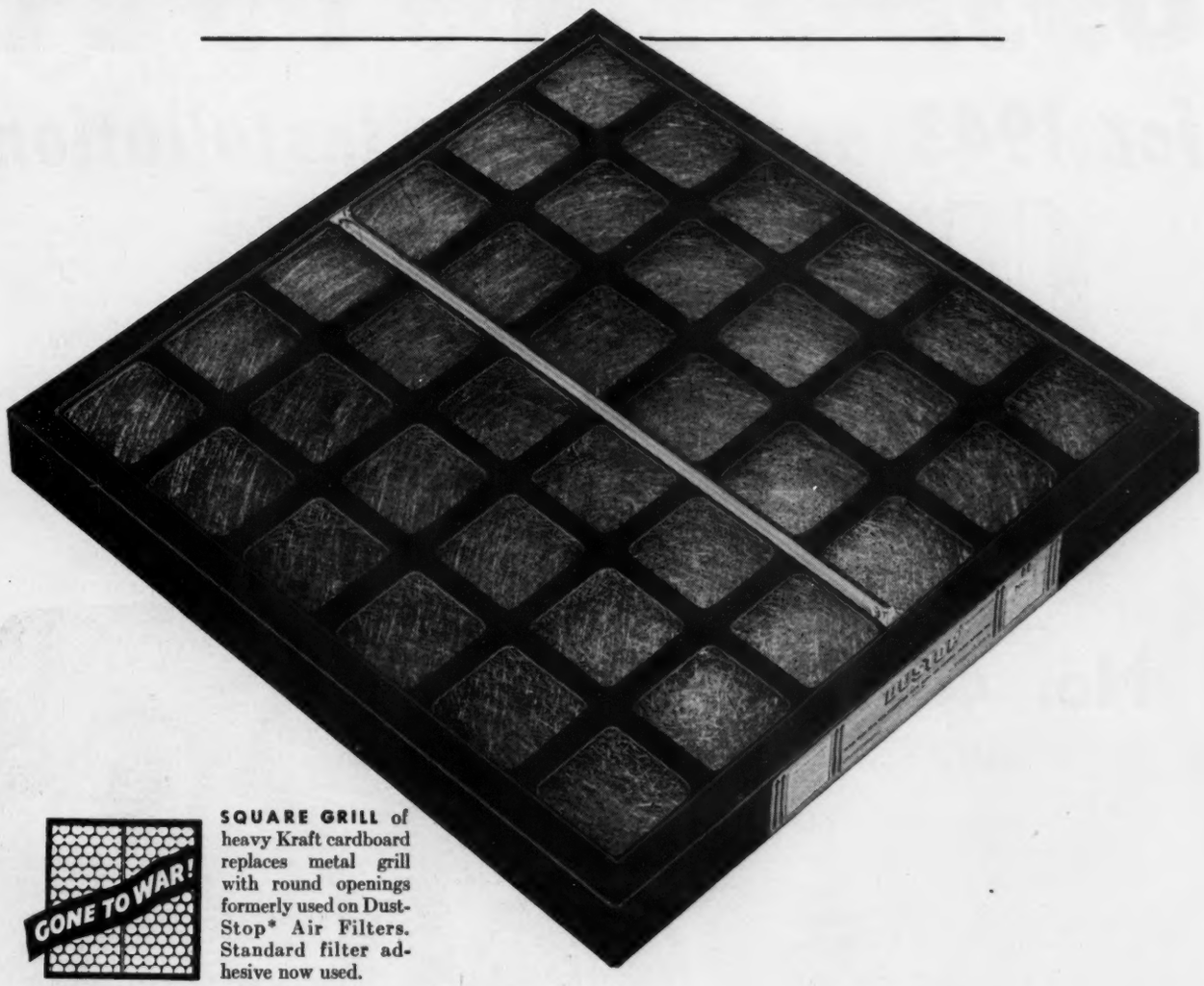
Space Heaters Will Be Widely Used

Bear in mind, the most universal idea here now is that space heaters must be the solution for heating problems wherever it is possible to find gas fuel for the kitchen. FPHA let it be known that it will use coal ranges and coal-fired circulation heaters wherever possible in the War housing it builds. FHA plans to use oil and gas floor space heaters wherever possible.

And finally bear in mind, it is expected the Furnace Order will be written so there will not be a tight pattern to control production and that those who have the ingenuity to make a furnace within the general specifications will have the opportunity to do business. It appears the purpose of the Order will be to indicate the numbers of furnaces that may be produced, but that it will not be the purpose to define who may produce, or whether the producers may be Big Business or Smaller Business.

Apparently it is intended that the industry itself may generally determine its own fate by making its plans through an intra-industry council, so long as it makes its plans within the limits of production requirements which will involve allocations, labor, transportation, and similar problems. Metals probably will be allocated with freedom to produce within the outline of specifications promulgated.

HERE IS DUST-STOP'S NEW "WAR" FILTER!



SQUARE GRILL of heavy Kraft cardboard replaces metal grill with round openings formerly used on Dust-Stop* Air Filters. Standard filter adhesive now used.

1 Quickly available
2 Price and maintenance economy the same
3 Filtering efficiency maintained
4 Saves critical metals and materials

BOMBER and tank plants, instrument manufacturers, scores of other war industries are using Dust-Stops in such great quantities that more of these filters were sold in 1942 than in any other year.

For dust control in precision manufacture means mechanical ventilation or air conditioning. And the makers of such equipment recognize the importance of Dust-Stops and include them in their systems.

Householders, too, have been using Dust-Stops in greater numbers than formerly. For clean filters help assure top efficiency from forced warm air furnaces—a big point with fuel rationing.

It was the responsibility of Dust-Stop engineers to meet this increased demand. They met it by designing a filter—the new "war" filter—which saves critical materials and keeps most of the advantages of the former Dust-Stop.

Most Advantages of the Leader in the Filter Field Remain Unchanged

Performance: Capacity, 2 CFM per sq. in. of area at 300 FPM. Average resistance, new, in inches of water gauge, .065 for 1-inch, .13 for 2-inch.

Economy: Cost only 1c per CFM as original equipment for industrial installations. Less than 1/10 of 1c per CFM to replace.

Maintenance: Filter face can be vacuum cleaned or rapped out, this practice can be repeated once or twice, further reducing maintenance costs.

Easy to Change: Anyone can replace dirty filters with new Dust-Stops in a jiffy.

Availability: Made from all-American materials which are not now listed as critical. Production is being expanded to meet growing requirements.

What about Fire-safety? The famous non-inflammable Dust-Stop adhesive is no longer available. As a substitute, standard filter adhesive are now used. The filter media is still made of incombustible glass fibers.

Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada Ltd., Oshawa, Ontario.

FIBERGLAS* DUSTOP* AIR FILTERS

*T.M. Reg. U.S. Pat. Off.

U. S. SENSIBLE

for 1943 and Postwar Installation

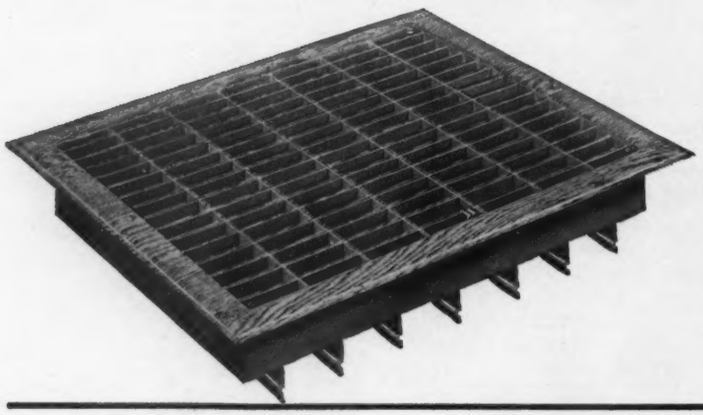
Looking at the Present and into the Future we visualize the Necessity of STANDARDIZING Register Sizes and CONCENTRATING on Standard Modern Types of Baseboard and Floor Gravity Registers and Air-Conditioning Registers.

U. S. leads off for 1943 with this Definite Aim and Plan for you to CONSERVE, THRIVE, and Operate on the basis of this Standardization Plan—to Help Win the WAR and Carry on Successfully after the War is WON.

FOR GRAVITY

No. 40 SERIES

The No. 40 Series of U. S. Baseboard Register is the Latest and Finest Type of Modern Baseboard Register that will eventually supercede and supplant all other types. Made in all standardized sizes—leak-proof—non-vision. Grille Bars may be set for Upward or Downward Flow of Air Stream if required.



U. S. TRUSSTEEL No. 400

No. 400 Trussteel Floor Register is a heel-proof, maximum free area register of sturdy construction with multiple valves running short way for easier operation and cleaner walls. No. 405 Trussteel Cold Air Face matches the Design of No. 400 Register.

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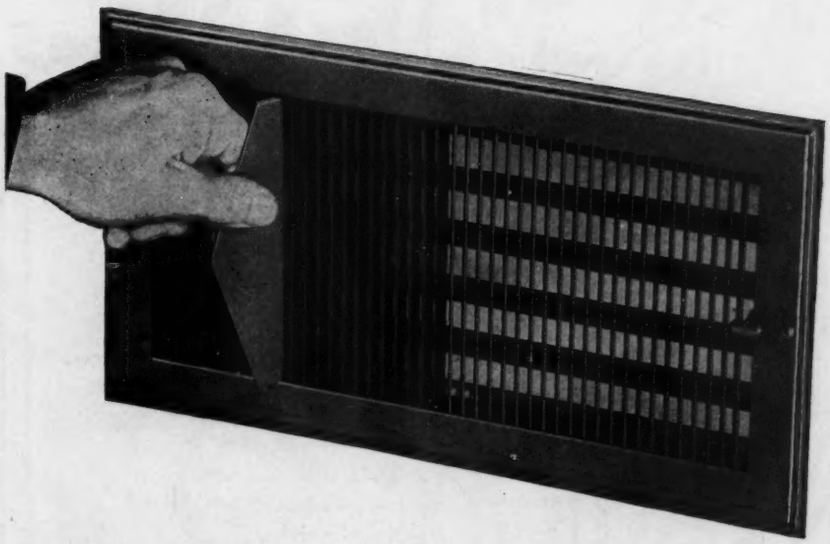
UNITED STATES REGISTER CO.

UNDOUBTEDLY THE INDUSTRY'S LARGEST

STANDARDIZATION



U. S. No. 256

4-WAY FLOW AIR-CONDITIONING REGISTER

No. 256 4-Way Flow Air-Conditioning Register provides all practical directional flows in a simple, sensible way that eliminates the obstructional resistance features of most registers of this type. Grille Bar setting for Side Flows can be changed as required with Setting Wrench without damage to grille or finish.

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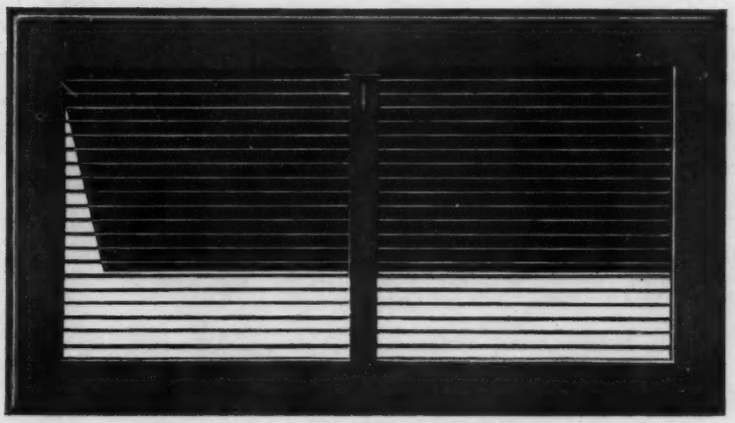
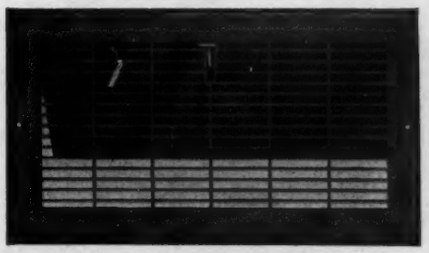
AIR-CONDITIONING REGISTER

Single Valve Construction. Grille Bars are adjustable with Setting Wrench. Prevents discoloring of Ceiling. Furnished with Grille for straight flow or 22° or 45° Down Flow Deflection. Quality sufficient for the Finest Job and Cost sufficiently low for the Most Competitive Job.





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A Single Valve Air-Conditioning Register made in Horizontal Slotted Design. Superbly Constructed—yet—while not a directional flow type—an Ideal Type of Register for Low Cost Installation where Directional Flow and Non-Vision Features are not essential.

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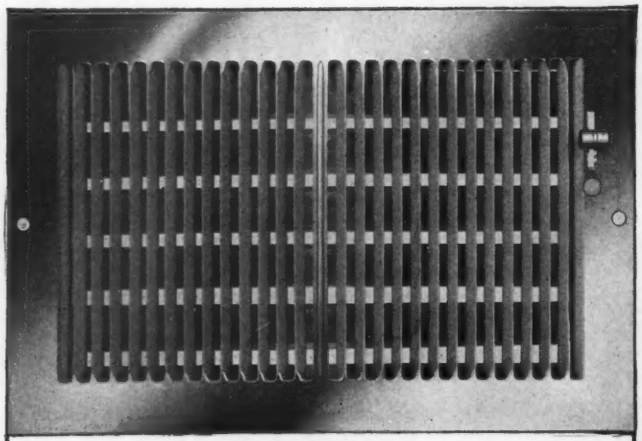

WHICH WAY DO YOU WANT THE AIR?

PLIAVANE

WILL SEND IT THERE!

The Pliavane Adjustiblade Register is most flexible. Individually adjustable face vanes direct the air horizontally at any angle you may wish, while back blades which are adjusted from the register face direct the air stream vertically. Yet the Pliavane is an inexpensive register—just the thing for the large housing development yet so well designed that it is good looking enough for installation in the finest home. The Pliavane is also made in a single valve construction where vertical deflection of the air stream is not important. The Pliavane is only one of the complete line of registers, grilles, intakes and diffusers made by Tuttle & Bailey, Inc. Send for catalog.

TUTTLE & BAILEY, Inc.

NEW BRITAIN, CONN.

NEW YORK CHICAGO PHILADELPHIA HOUSTON

CHENEY *Protected* METAL

A PROTECTED STEEL SHEET. Special slate-pitch coating makes it moisture-proof, weather-proof and will resist heat up to 230° F. Will not crack or peel. Meets gov't specifications.

CHENEY "Protected" METAL is tough. It can be sheared, bent in hand brake, Pittsburg locked, malleted, riveted and worked with regular shop tools.

Forms easily into warm air heating or ventilating ducts, counter flashings, valleys, metal roofs, downspouts. Adaptable to all general sheet metal work.

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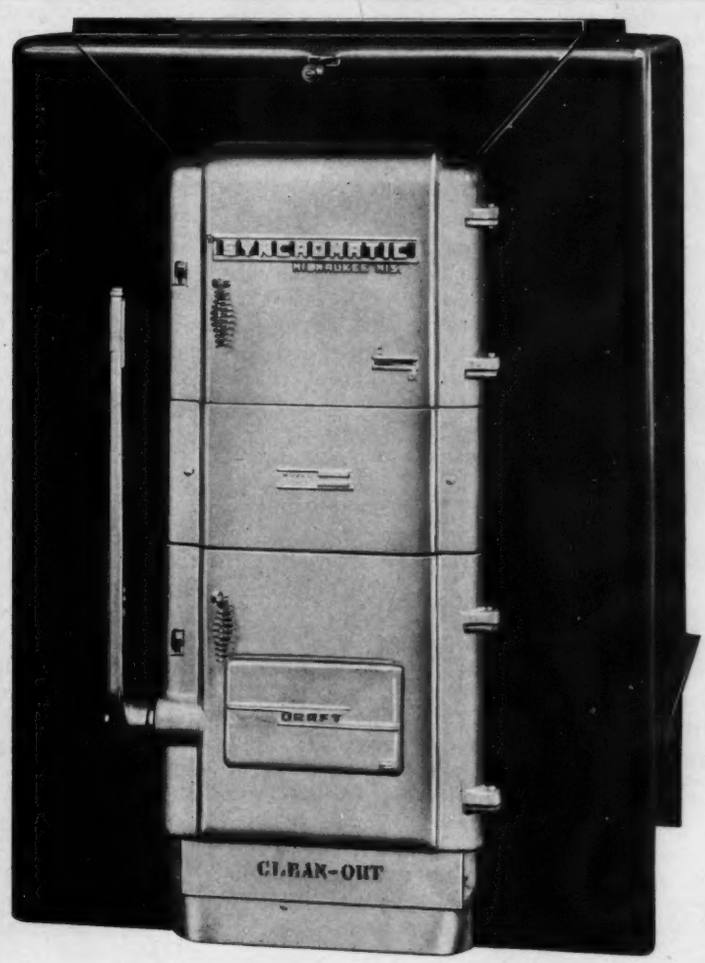
CHENEY METAL PRODUCTS CO.

34 Oxford St. TRENTON, N. J.

SOME OF THE REASONS YOU'VE HEARD SO MUCH ABOUT . . .

Syncromatic COAL and OIL FORCED AIR and GRAVITY STEEL FURNACES



1. Genuine counterflow heat exchanger—one of the most efficient methods of heat transfer known.
2. Air travel to all parts of the heated surfaces—no hot spots or spot burnouts.
3. Heavy 10-gauge completely electrically welded units. NO BOLTED JOINTS or CEMENTED SEAMS to loosen or crack.
4. ISOLATED genuine firebrick firepot superheats carbons in the fuel for highest burning efficiency.
5. Vertical self-cleaning flues avoid midwinter letdown in efficiency and performance.
6. Accessible soot and flyash clean-out. No expensive cleaning jobs needed.
7. Perfect for automatic firing of all solid fuel due to long reverse flue travel.
8. Standard firebrick firepots are lowest in replacement costs over any other furnace.

CAPACITIES AVAILABLE B.t.u.		
FORCED	MODEL NO.	GRAVITY
90,000	222	70,000
146,000	224	90,000
172,000	227	114,000
200,000	230	138,000
250,000	235	183,000

Syncromatic

UNIT STANDARDIZATION

The photo at the right illustrates the complete standardization of SYNCROMATIC coal-fired steel furnaces. Shown here are five of six SYNCROMATIC units. In each, the fronts, shakers, grates and casings (except for sides) are identical and interchangeable. Thus, the various sizes differ only in length. That means economy in production . . . economy in dealer stocks . . . economy that ultimately passes on to the home owners and more sales and larger profits. Send for Bulletin Now!

CF235 CF230 CF227 CF224 CF222

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3373 No. Holton St.
Milwaukee, Wis.

Government limitations on materials and manufacturing prevent us, and other suppliers, from making Registers and Grilles to order. We have a fairly good stock of standard sizes and shapes on hand, and you will be helping yourself a great deal if you will check your requirements with us (or other suppliers) before going too far on jobs.

NON-METALLIC GRILLES NOW AVAILABLE

We have developed grilles in several non-critical materials, which we urge you to consider in place of metal, whenever possible.

Made-to-order sizes for Army and Navy work will be available for a limited time, in accordance with WPB regulations

REMEMBER, R. & G. executives are always at your service. If you have special needs, we'll try to help you; if we haven't got what you want we may be able to tell you who has! YOUR INQUIRIES ARE INVITED.

REGISTER and GRILLE MANUFACTURING CO. Inc.

74 BERRY ST. • BROOKLYN, N. Y.

Warm Air Ass'n Winter Meeting

(*Continued from page* 124)

available. WPB admitted in the beginning and still admits that these restrictions were severe on many manufacturers, but that they were absolutely necessary for the pursuit of the war.

On Aug 10, War Production Board approved concentration again and on August 20, the draft of the order was read to the advisory committee. The two principal points of interest of the August 20 draft were that there were to be no more steel furnaces manufactured and there were to be no more gas or oil furnaces manufactured.

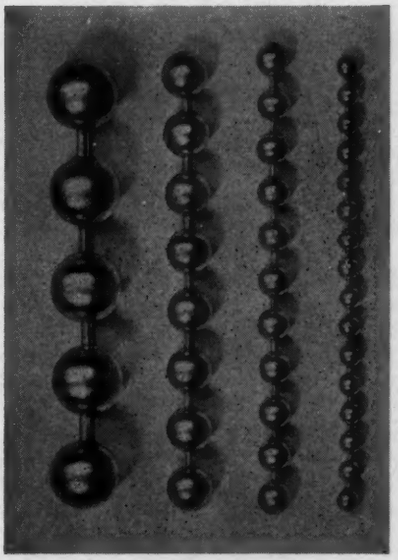
On September 5, a letter was sent to all furnace manufacturers asking them how they could operate under the proposed plan and on September 8 an outline was presented to WPB committee on concentration. On October 1, the Concentration Board asked furnace manufacturers to come to Washington and in the meeting on October 2nd disclosed many problems of profits, labor, cross-haul, management, etc. On October 9, the outline of the order as proposed by WPB was read to the furnace manufacturers' advisory committee and the committee was asked to appoint consultants to War Production Board. Six WOC consultants came to Washington on October 18 and were engaged as temporary government employees. On November 19, a complete plan was presented to WPB outlining concentration and WPB was told how a nucleus group could be selected, but the actual manufacturers to be selected was not presented to WPB. On December 7, the day before the meeting in Cleveland, still more revisions were made, more data was presented, but the plants to do the manufacturing were still not selected and the plan was not in operation. As this January issue goes to press, no further developments have taken place to our knowledge, except issuance of order L-22-a stopping manufacture of steel furnaces.

Mr. Allwork and Mr. Johnston both tried to explain that at no time during all this lengthy discussion of possible concentration was there any desire on the part of WPB or other Washington agencies to put any squeeze on repair and maintenance. WPB and the agencies hope and expect that the industry will patch wherever possible, instead of replace, but maintenance will be assured. Final approval of any concentration order, whether in the form as reached on December 7 or in some completely new form will not be made by the Plumbing & Heating Branch of WPB, but will be made by the Concentration Committee of WPB.

Both Mr. Allwork and Mr. Johnston also assured the convention that at no time has the essential civilian need for heating been denied by any Washington agencies and that the essentiality of heating equipment is proved by its recognition under the Controlled Materials Plan. Mr. Allwork said furnace manufacturers will operate under the Controlled Materials Plan and manufacturers will receive materials from Office of Civilian Supply as explained in AMERICAN ARTISAN in the November and December issues. The present intention is to get the schedule for material requirements under CMP from the Plumbing and Heating Branch and the program as set up will operate for an 18-months period.

Of further interest was the statement by Mr. All-

BEAD CHAIN*



No. 20 BEAD CHAIN | No. 13 BEAD CHAIN | No. 10 BEAD CHAIN | No. 6 BEAD CHAIN

Illustrations Actual Size
Samples on Request

Size No.	Dia. of Bead in Inches	Approx. Tensile Strength in Pounds
6	.125	25-30
10	.187	45-50
13	.250	85-100
20	.375	175-200

MATERIALS

Brass, Bronze, Gilding Metal, "Monel" Metal, Nickel Silver, Aluminum; Chromium, Nickel. Standard attachments as shown, or made to customers' specifications.

CHAIN AND CORD COUPLING
(Actual size)

This coupling, No. 10-V, makes a firm detachable connection between BEAD CHAIN and Venetian blind or sash cord. It is easily applied. For No. 10 BEAD CHAIN only.

*Trade Mark Reg. U. S. Pat. Off.

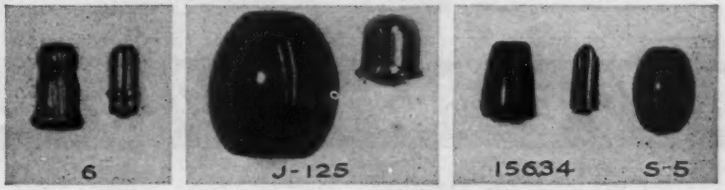
BEAD CHAIN* cannot kink nor tangle. Its swiveling characteristics make it advantageous for regulators and controls with sheet metal fixtures and installations.

BEAD CHAIN* is most practical for automatic regulation of dampers and ventilators. Specially designed sprockets insure smooth operation.

BEAD CHAIN* may be had in bulk and cut lengths, with couplings and attachments, or in assemblies to meet the specifications of the manufacturer.

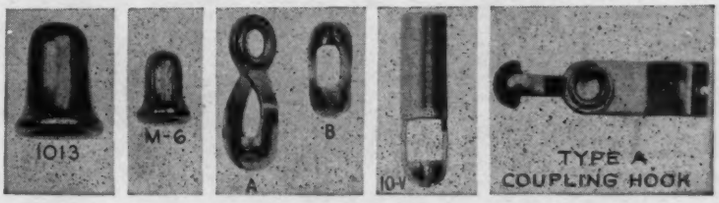
BEAD CHAIN* engineering service is prepared to cooperate fully with manufacturers in the design of assemblies where the use of chain is necessary or desirable.

DETACHABLE PENDANTS



NON-DETACHABLE PENDANTS

COUPLINGS



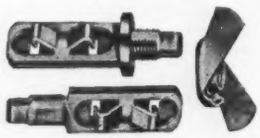
BEAD CHAIN
ESTABLISHED 1914
Trade Mark Reg. U.S. Pat. Off.

THE BEAD CHAIN MANUFACTURING CO.
BRIDGEPORT **CONNECTICUT**

E-Z-ON . . . *The Popular* DAMPER REGULATOR *for Wartime Heating Systems . .*

- Uses less Critical Materials
- Cuts Installation Time in Half
- Easy to Install with Unskilled Helpers
- Makes attractive, rattle-free job

Standard E-Z-ON

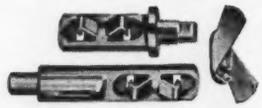


No. 27. ⅜ inch bearing. Solid end tail piece.

Simple to Install . . .

The E-Z-ON is a favorite of sheet metal men everywhere because of the time it saves on every installation. Any man who can swing a hammer can install it. Just slip the regulator over damper edge with prongs over scribed center line. Lay assembly on block of wood, and drive prongs through the sheet metal, then turn over and clinch prongs. Prongs are strong enough to pierce 20-gauge metal.

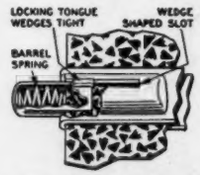
Snap-Tite E-Z-ON with Retractable Tail Piece



No. 29. ⅜ inch bearing. Tail piece with snap end bearing.

This IMPROVED E-Z-ON with Retractable Tail Piece avoids any need for bending the damper or springing the pipe to insert the damper. Just attach the same as the Standard E-Z-ON, then insert the head piece through one end, slide the Snap-Tite Tail Piece over the opposite hole and it automatically snaps through the hole and LOCKS, free of rattle.

E-Z-ON Retractable Tail Piece with Patented Locking Feature

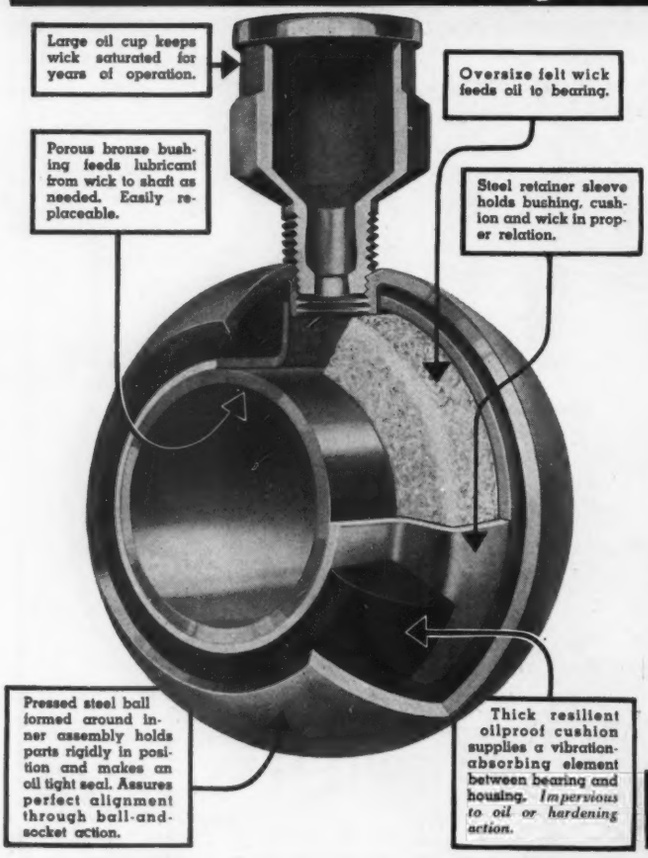


The locking tongue and wedge shaped slot is a patented feature of the Snap-Tite that makes it superior to other snap end bearings. When movable bearings snaps out through pipe hole upon installation, the lug or locking tongue wedges securely in the tapered slot and avoids all chance of rattle, firmly locks into position.

Save labor, time and money on Wartime Damper Installations . . . with E-Z-ONS. Jobbers everywhere stock them.

M. A. GERETT CORP.
2947 NO. 30TH STREET ★ ★ ★ MILWAUKEE, WISCONSIN

No Other Bearing In Air Conditioning has all these QUALITY FEATURES


Large oil cup keeps wick saturated for years of operation.
Oversize felt wick feeds oil to bearing.
Porous bronze bushing feeds lubricant from wick to shaft as needed. Easily replaceable.
Steel retainer sleeve holds bushing, cushion and wick in proper relation.
Pressed steel ball formed around inner assembly holds parts rigidly in position and makes an oil tight seal. Assures perfect alignment through ball-and-socket action.
Thick resilient oilproof cushion supplies a vibration-absorbing element between bearing and housing. *Impervious to oil or hardening action.*

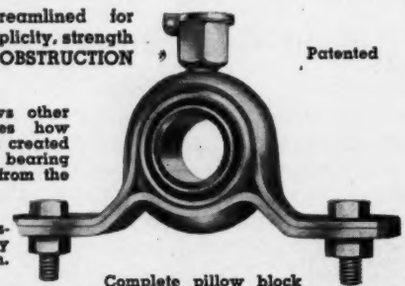
The Triangle Shock-Absorbing Pillow Block is a trouble-free bearing for fans, blowers and other devices requiring silent operation—perfect alignment —and self-lubrication.

1. **It is the only bearing for air conditioning that has a resilient oil-proof cushion scientifically built into the bearing—for silence and vibration absorption.**
2. **Ball-and-socket design for perfect alignment.**
3. **Scientifically streamlined for compactness, simplicity, strength and MINIMUM OBSTRUCTION TO AIR FLOW.**

Cut-away view shows other features and illustrates how unique engineering has created a new type of silent bearing outstandingly different from the conventional.

Triangle design assures high efficiency and low cost operation.

Write for quotations.



Patented

Complete pillow block
One of several types of mountings

TRIANGLE MANUFACTURING CO.
392 DIVISION STREET OSHKOSH, WISCONSIN

work and Mr. Johnston that the concentration program is for cast iron furnace manufacturers only. Mr. Johnston admitted this indicates stopping steel furnace manufacture—this is now actually true as of December 31, when L-22-a stopped steel furnace production. However, repair parts materials equal to 200 per cent of each quarter's use in 1940 has been granted so that steel furnace manufacturers may continue to manufacture parts necessary for repair and maintenance. The two men from Washington explained that there is nothing in a concentration order on pipe and fittings. Smoke pipe is treated in a separate order. Furthermore, repair parts, whether for cast furnaces or steel furnaces, probably will be manufactured by each manufacturer for his own furnaces.

In answer to a direct question as to whether or not the furnace industry would be granted material to produce 200,000 furnaces or not, Mr. Johnston said that he was not in a position to answer this question. Since the audience had heard from Mr. Boeddener that the association requested 200,000 furnaces and since Mr. Boeddener had declared one Washington agency is holding out for only 56,000 furnaces, Mr. Johnston left it up to the audience to draw its own conclusions. Therefore, as this report stated in the opening paragraph, manufacturers who came to Cleveland hoping to find some information on which to base their 1943 plans, were disappointed.

Post War Planning

S. Morris Livingston, Chief, National Economics Unit, Department of Commerce, speaking on other phases of post war planning, said that in the post war period, industry must assure the American public that industry has a plan which will maintain equal economy among all classes of wage earners; if industry doesn't give this assurance then the people will probably fall for any crackpot scheme or racket or type of government subsidy or government control which is proposed to maintain men in jobs. The big problem in post war operation will be to keep ten million workers in jobs which did not exist in 1940. This means there must be ten million more jobs in the post war period than we ordinarily made available under conditions as usual prior to the war.

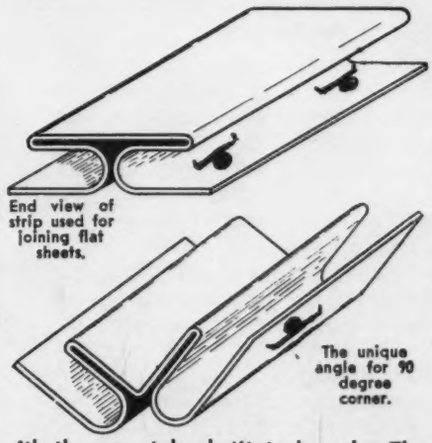
In 1940, American industry produced some $90,000,000 worth of goods. In the post war period, some plan must provide a market for at least fifty percent more products than we produced in 1940 if these ten million workers are to be employed.

There will be a peculiar condition in the post war period, namely, that there will be a very large purchasing power in the form of savings accounts, government bonds, and so forth, but goods will be very scarce. In 1942, the Department of Commerce calculates that there will be about $26,000,000,000 more ready cash than there will be products to buy with this money. In 1943, if the war continues at its present rate, there will be $30,000,000,000 in cash reserve which the American people will find impossible to spend.

So far as heating manufacturers and the heating industry are concerned, Dr. Livingston said that the chief problem will not be the number of families needing housing but will be the problem of adapting housing to the various income groups. If we assume that the average family spends one-fifth of its income for shelter after deducting savings and taxes, then houses renting for under $40 a month will be the acute need. Furthermore, if families are to be encouraged

SHEET-LOCK

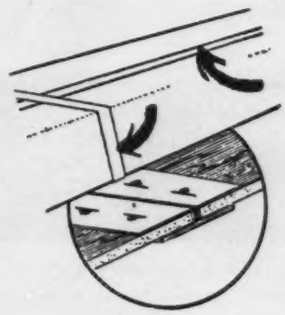
THE SELF FASTENING WAY TO JOIN ALL RIGID AND FLEXIBLE BOARD . . . .



End view of strip used for joining flat sheets.

The unique angle for 90 degree corner.

Steel and sheet metal must be conserved for war work. Many industries that have utilized these critical materials must now seek and use substitutes. The sheet metal heating and air conditioning contractors have been fortunate to find several excellent boards for substitute purposes, from which they can fabricate their ducts, fittings, casings, cabinets, jackets, etc. SHEET-LOCK was perfected to provide a way to easily and inexpensively join and corner the work produced with these metal substitute boards. The illustrations below show an interesting application that SHEET-LOCK has contributed to the industry.



WHAT THE "WAR PRODUCTION BOARD NEWS" SAYS ABOUT SHEET-LOCK

"NEW WAY TO JOIN ALL SHEET BOARDS SAVES MATERIALS AND MAN HOURS. New double channel moulding joins and locks sheet boarding and plywood, edge to edge at any angle, making tight, strong joint. ESPECIALLY SUITED FOR DUCT WORK. Is easily and quickly installed without screws, bolts, nails or other accessories. Low in cost. Facilitates use of board in substitution for sheet metal."

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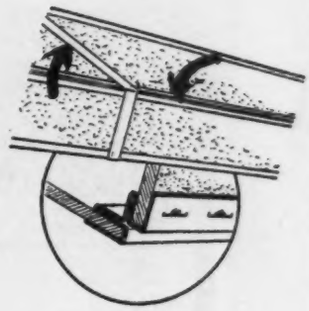
WHEREVER SUBSTITUTE BOARD IS USED

While designed originally for duct work it may also be used to advantage in cabinet, container and casing work. Holds both rigid or flexible boards equally well . . . durable, air tight and rust resisting . . . lasts indefinitely. Quantity orders may be cut to exact specifications to eliminate waste and excess labor. Easily installed . . . simply push board into place. Now in use in many of the large defense industry plants, for duct-work.



AVAILABLE IN BLACK OR SOLDER METAL . . . WRITE FOR SAMPLES AND PRICES

SHEET-LOCK CO.

7 SOUTH DEARBORN ST. CHICAGO, ILL.

to buy or build houses, then the construction industry must offer more attractions in the new houses than we have offered heretofore. At the same time, the program of converting existing old houses into new multi-family structures will probably be a very important activity, particularly for housing units which will be for rent and which will be rented at prices the low income workers can afford. Dr. Livingston concluded his discussion with the assertion that right now is none too soon to plan on how we will get material, what kind of materials we will use, the type and prices of houses we will build, what sales program we will inaugurate and where we will find our prospects.

Twenty-fifth Anniversary

A very important part of this December convention in Cleveland was the celebration of the association's 25th silver anniversary. The guest speaker at the luncheon was Dr. Arthur Cutts Willard, President of the University of Illinois and for many years actively associated with the association in its research program at Urbana. Dr. Willard summarized the twenty-five years of association organization and the many years of consecutive engineering research by reading excerpts from the history of the association prepared by Allen W. Williams, immediate past managing director.

It was in 1914 that Managing Director Williams first asked Dr. Willard to appear before what was then called the Midland Club consisting of Mid-West manufacturers of furnaces to tell these manufacturers how the University could assist the manufacturers by conducting a research program to develop better ways of installing warm air heating systems. This first meeting led to other meetings to continue the discussion and on June 9, 1915, Dr. Willard said prophetically to this group that "Your job will not be finished until comfort is provided throughout every warm air heated house." Dr. Willard pointed out that this 1915 assertion still holds good.

In 1917, according to the history, Dr. Willard told the association that a very important problem was to educate the dealer in better ways of engineering and installing warm air heating systems, and again this 1917 assertion still holds good. Another problem which has confronted the industry during all its years of research and which is still a major problem is that of educating the home owner to properly operate his warm air heating system. Only insofar as the warm air heating system provides satisfactory comfort to the owner, can the research program be considered worth while. In the 25 years of research, more than $225,000 have been spent on the research program. In this time the industry has sold two and one-half billion dollars worth of warm air heating equipment and the market is still increasing. This, surely, said the speaker, is evidence that research does pay. The research residence, where many of the tests have been conducted, was built under then President Langenberg in 1923 and research in the residence and in the mechanical engineering laboratory has been continuous ever since.

Association History

Allan Williams has prepared a history of the Warm Air Heating and Air Conditioning Association and at the Tuesday afternoon session, he presented excerpts from this history to highlight the 25 years of association. This history, briefed, will be presented in future issues of AMERICAN ARTISAN.

WAGNER MOTORS *give* MAXIMUM *Efficiency* ON HEATING, VENTILATING *and* AIR CONDITIONING EQUIPMENT THAT GOES INTO *War Service!*

Because Wagner motors have proved their reliability and efficiency in pre-war days on all kinds of motor driven equipment, thousands of them have already gone into war service. Today you will find Wagner motors driving heating, ventilating and air conditioning equipment in war industries, army cantonments, navy yards, air fields and on ships — delivering the same dependable service that has established Wagner's outstanding reputation for high-quality motors.

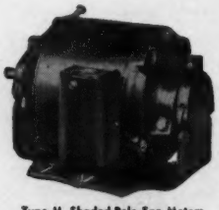
Wagner's plant is working day and night, turning out more motors now than ever before, and are supplying these dependable motors wherever they are needed to help in our "all-out" war effort.

If the equipment you manufacture or install is motor driven and essential to war production or to the armed forces — consult Wagner. Twenty-five branch offices, located in principal cities and manned by trained field engineers, are at your service.

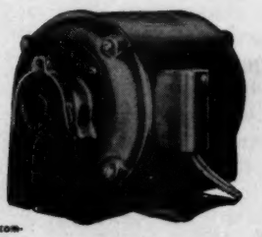
Remember — SERVICE FOR THE DURATION IS OF PARAMOUNT IMPORTANCE

In times like these, when many manufacturers of electrically driven equipment have converted their plants to the manufacture of victory material, it is good to know that the motors driving their equipment in the field will not want for service. Wagner's 25 sales and service branches are on the job in all parts of the country to help you keep your products in continuous service, no matter where they are.

Type RP, Squirrel-Cage (1/6 to 400-hp.)—of simple construction, easily installed, and exceptionally sturdy and dependable.



Type M, Shaded-Pole Fan Motors (1/125 to 1/20-hp.)—ideally suited for fan and blower drives where the fans or blowers are mounted directly on the motor shaft.



Type RA, Repulsion-Start-Induction (1/8 to 15-hp.)—the ideal motor for heavy duty applications such as compressors, pumps, stokers, etc.

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An automatic shutter with a patented counter-balancing mechanism that makes the louvres open the instant the fan or blower starts, and snap tight-shut when the air current stops.

Adjustable for different air velocities according to the requirements of any particular installation.

Absolutely quiet. Its spring mechanism holds the louvres so firmly closed when not in use that there is never any flapping or fluttering. Completely weather-stripped around the inner edge of the frame, making the unit the tightest-fitting shutter on the market.

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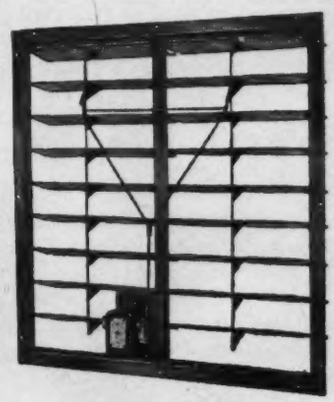
Rear View (Closed)

All-Steel Motorized Shutter



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The HOSSFELD UNIVERSAL IRON BENDER
"WRENCHLESS TYPE"

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Bends Pipe, Bars and Angle Iron

Let the Hossfeld Bender Solve Your Bending Problems

No other Bender on the market like it.

This Powerful, Steel Constructed, Wrenchless, Universal, Pipe, Bar and Angle Iron Bender, will neatly, quickly and accurately turn out most any kind of a bending job that ever comes up, either in maintenance or production work — such as Eye Bolts, "U" shapes, "S" shapes, Links, Circles, Offsets, Braces, Cranks, etc. It will also roll eyes on flat stock for Automobile Springs and the like.

It does a perfect job on Pipe work, bending to any degree or to a continuous coil without flattening it or splitting the seam.

The bending of Angle Iron is an exceptionally wonderful feature of the machine. It forms a smooth perfect curve or circle of any radius desired, without twisting or distorting the stock in the least. It also bends Sharp Square bends on notched Angle Iron.

The machine is built in two sizes. The larger size bending up to 2-inch standard pipe, 4½-inch flat bar stock, or 2x2x⅜-inch angle iron, cold. There are thousands of these machines in use by all classes of trade in the U. S., Canada and other foreign countries.

Write for descriptive literature and prices.

Samples of Bar Bending

Samples of Pipe Bending

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FROM 300,000 to 2,800,000 B.T.U'S PER UNIT

—TODAY THEY'RE WORKING FOR UNCLE SAM

• TOMORROW THEY'LL MEAN PROFITS FOR YOU

Bertossa Power Heaters are today working overtime heating army camps, navy bases, hospitals, utility buildings, etc., for United Nations forces all over the world. And here at home they are being specified by heating engineers and architects for homes, churches and industrial buildings.

This popularity is due to (1) compactness of complete blower and heating unit; (2) down draft flue for increased efficiency; (3) 90% direct heating surface and (4) adaptability for complete air conditioning.

From every standpoint the Bertossa has proven its effectiveness on the job—and likewise its profit opportunities to live-wire dealers.

Bertossa

JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN

Technical Review

As a part of the anniversary program, Prof. A. P. Kratz, known to everyone in the industry, presented a summary with slides of the important research tests which have contributed to better warm air heating. Among these were slide illustrations of the results of the tests on rating warm air furnaces, tests on the carrying capacity of leaders and stacks, tests on air distribution throughout the residence, tests on return air systems as an important function of a warm air heating plant operation, tests on automatically fired heating devices and tests on forced warm air heating.

Prof. S. Konzo said that we are now in a period of curtailment or marking time and even backsliding due to regulations confronting the industry because of the war, but we look forward hopefully to the post war period, in which industrial research will play an even greater part than it has in the past development of heating. In the overall picture of post war planning, it seems necessary that the research committee and the research staff now make careful plans to preserve the standing we have attained and to lay a solid ground work for future development. This future ground work can best be assured if the industry will follow a suggested 10-point plan of endeavor—five points relating to immediate need and five points which form the frame work for future planning. The first five points requiring immediate attention are:

1: To assist in every way possible in the campaign of fuel conservation. Many important conservation measures can be taken from Circulars 44, 46 and 47 of the Engineering Experiment Station, available free.
2: To assist in the campaign for prolonging the life of heating equipment; explained in Circular 45;
3: To assist in the standardization program to eliminate all possible waste;
4: To aid in the formulation of testing and rating codes, no matter where these suggested codes may originate;
5: To assist defense housing agencies and the army in the solution of their numerous special problems.

The five immediate points above constitute a very large order, but the five points for future planning, while they may seem immature, must take cognizance of the fact that the warm air heatng industry faces a possible chaotic condition in the post war period with the home owner as the possible main loser. This five-point program consists of—

1: To make plans for the improvement of our product and the expansion of forced warm air heating in all possible fields of application;
2: To develop housing as a technological science and to tie the heating plant into these developments as a necessary facility of every house;
3: To prepare a forced warm air manual, similar in scope and simplicity to the present gravity heating manual;
4: To lay plans for future dealers' training by making available to the dealer practical text books of simplified presentation;
5: To make plans for future large scale testing of furnaces, filters, registers, fittings and fans.

War Work

The round table discussion of ways and means of obtaining war contracts was not very productive of ideas.

RIGHT NOW, we are working day and night producing War materials. But we have not stopped thinking and planning to develop even better MASTER Heat Regulators than ever before — and to give you the same reliable service you naturally expect from the White Manufacturing Co.

WHITE MFG. CO.
2368 University Ave. St. Paul, Minn.

Cut Off Second Floor Returns

(*Continued from page* 85)

perature in the house dropped below the thermostat setting and could only be kept up by the elimination of second floor returns.

However, in cutting returns off from the upper floors, additional air should be taken from the first floor to compensate for the ducts cut off; also, the ducts cut off should be sealed at the bottom, otherwise they will continue to pour cold air into the basement; chilling the basement unduly. In all cases the occupants will notice a decided increase in floor temperature on the first floor.

This condition also happens in gravity systems, as is brought out on page 352 of "Gravity Warm Air Heating—Digest of Research Engineering Experiment Station," University of Illinois, as follows:

"Temperature studies for the downstairs and upstairs rooms are shown in Figures 227 and 228. Figure 227, for the first story rooms, shows that floor temperatures were no better for the sixth installation with the entire 21 returns in operation than for the fifth installation. But the same Figure 227 shows that when the 12 upstairs rooms were closed, the remaining returns on the first story produced a floor temperature condition more satisfactory than was produced with any other of the six installations."

"Figure 228 also shows a slightly improved temperature condition at the floor level in the upstairs rooms, but does not indicate that a material difference existed between the results obtained with 21 and with 9 grilles open, respectively."

The amount of savings in fuel, of course, will vary a great deal, depending upon conditions encountered, but from the experience we have had the saving is well worth the cost of the work, and in this time of fuel shortage would have a twofold savings in that the comfort condition would be better on the first floor at a lower thermostat setting than was previously carried, besides the saving in fuel made by the elimination of the second floor returns.

Concluding this very simply, you would not think of running the supply pipe of the hot water heater to the refrigerator to cool the water off before it went to the heater to be warmed.

◆

Herman F. Maier

Burial rites for Herman F. Maier, 48, 7124 Morgan St., Chicago, chief engineer and secretary of the New York Blower Company, took place recently in Oakwood Cemetery in Bucyrus, Ohio. Mr. Maier came to Chicago from his company's plant in Bucyrus in 1918.

He is survived by his widow, Edith, and three sons. Death was attributed to a heart attack. Mr. Maier was affiliated with the American Society of Heating and Ventilation Engineers.

WISS *Famous Since 1848 . . . .*

BEST BY TEST

In sheet metal working shops the nation over, the name "WISS" is synonymous with fast cutting, high quality snips —snips that are as famous today as they were in 1848.

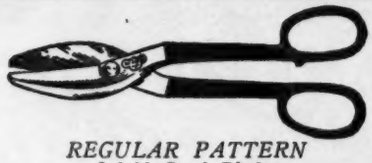
For 95 years, WISS SNIPS have won recognition for quality performance and maximum value—for strength and long life in hard service—for outstanding ability to meet everything demanded of them.

BULLDOG SNIPS
Inlaid Steel Blades

"METAL MASTER" SNIPS
Aviation Pattern

SCROLL-PIVOTER

EVERY TYPE OF SNIP FOR EVERY KIND OF SERVICE



REGULAR PATTERN
Inlaid Steel Blades

"V" PATTERN COMBINATION
Solid Steel

LIGHT METAL SNIP
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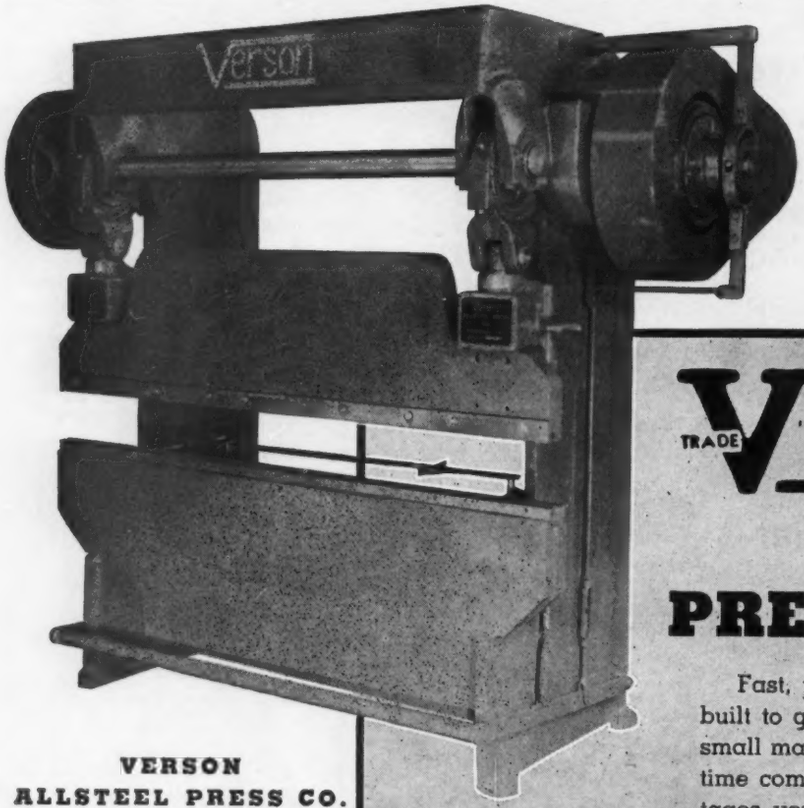
The Complete Quality Line **SNIPS**



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Fast, powerful Verson Junior Brakes are built to give big machine performance with small machine economy. The coming peacetime competition will require all the advantages, you can get — a Verson Press Brake will give you many of them.

Simplified Gravity Systems

(*Continued from page* 94)

pipe area does not result in a corresponding percentage increase in the carrying capacity.

On the other hand, as shown in Table 4B, when a 3-in. by 10-in. and a 3-in. by 12-in. stack were separately attached to the same leader pipe, the increase of 20 per cent in stack area was accompanied by an increase in carrying capacity of approximately 17.5 per cent. Hence, in the case of leader pipes attached to undersized stacks, the carrying capacity of the unit is practically proportional to the stack area.

As stated in Section 4, the register air temperature for second-story registers was assumed as 170 deg. F., when the bonnet air temperature was 200 deg. F. The average curve shown in Fig. 1 for second-story runs was based on various combinations of leader lengths and ratios of stack area to leader area. For the purpose of this analysis, which has been based on the carrying capacity of a conventional run 8 ft. in length, reference has been made not to the average values shown in Fig. 1, but to the specific data selected from the original tests, in which the lengths and ratios were definitely stated. The carrying capacities of second-story combination units were determined from the basic data shown in Table 5. Since the stack is the most restricted section of the unit, the minimum or *required* leader-pipe area can be considered as equal to $\frac{\text{stack area}}{0.7}$. The average leader carrying capacity per sq. in. of *required* leader area, as shown in the last line of Table 5, was approximately 170 B.t.u. per hr., which is in close agreement with the value of 167 B.t.u. per hr. used in the Standard Code.

Table 6 shows the carrying capacities of second-story leader pipes for a basic run of 8 ft. in length with a single 90-degree elbow in the boot

TABLE 5
CARRYING CAPACITY OF STACKS AND LEADERS AS RELATED TO REQUIRED LEADER AREA (SINGLE-WALL)

			Case 1	Case 6
Reference	Bulletin No.		141	141
	Page No.		47 and 53	46 and 52
	Curve No.		30	15
Stack	Size, in.		3 x 10	3 x 13
	Type		single	single
	Height		10 ft. 6 in.	10 ft. 6 in.
Leader pipe	Diameter, in.		8	10
	Length, ft.		8	8
Register temperature, deg. F.			170	169.5
Temperature drop, deg. F.			30	30.5
Bonnet temperature, deg. F.			200	200
B.t.u. delivery per hr.			7350	9400
Leader pipe area, sq. in.		Actual area	50.3	78.5
		Required area*	43.9	55.7
Leader capacity, B.t.u. per hr. per sq. in.		Actual area	146	120
		Required area*	171	169—average 170

*Required leader area considered as equal to $\frac{\text{stack area, sq. in.}}{0.7}$

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HEATING DIVISION

GAR WOOD INDUSTRIES, INC., DETROIT

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connection. The procedure which was followed in estimating the items in Table 6 for Units Nos. 11 to 16, inclusive, was as follows:

(a) With the cooperation of the duct and fittings manufacturers, six commercial stack sizes were selected and designated as standard.

(c) The required leader area was determined by dividing the stack area by 0.7.

(e) The capacity of the unit was obtained by multiplying the required leader area by 170.

TABLE 6
CARRYING CAPACITIES OF SECOND-STORY COMBINATION UNITS (SINGLE-WALL)

Unit No.	11	12	13	14	15	16
(a) Commercial stack size, in.	10 x 3¼	12 x 3¼	13 x 3¼	14 x 3¼	12 x 5¼	14 x 5¼
(b) Stack area, sq. in.	32.5	39.0	42.2	45.5	63.0	73.5
(c) Required leader area, sq. in.	46.4	55.7	60.4	65.0	90.0	105.0
(d) Required leader dia., in.	7.7	8.4	8.8	9.1	10.7	11.6
(e) Capacity, B.t.u. per hr.	7 900	9 470	10 260	11 050	15 300	17 850
(f) Commercial leader size to use, dia., in.	8	9	9	10	12	12
(g) Required register free area, sq. in.	46.4	55.7	60.4	65.0	90.0	105.0
(h) Commercial baseboard register size, in.	10 x 8	12 x 8	12 x 8	12 x 8	12 x 10	13 x 11
(i) Actual register free area, sq. in.	55.0	66.5	66.5	66.5	84.0	100.8
(j) Ratio of free areas: $\frac{\text{actual}}{\text{required}}$	1.19	1.20	1.10	1.02	0.94	0.97

Notes:
(a) Sizes designated as standard by fittings manufacturers.
(c) Required leader area = $\frac{\text{stack area}}{0.7}$
(e) Capacity, B.t.u. per hr. = required leader area × 170.
(h) Sizes designated as standard by register manufacturers.
(i) Opening sizes assumed as ⅛ in. less than listed register sizes. Free area assumed equal to 75 per cent of the opening area.
(j) From Fig. 2 no reduction in capacity was effected by the register for ratios of actual free area to required area greater than 0.9.

(f) The next larger size of commercial leader pipe was used.

(h) The nearest commercial size of register designated as standard by the register manufacturers was used.

Thus, the leader-pipe sizes proposed (item (f) in Table 6) for each size of stack are the next largest commercial sizes to meet the requirements (item (d)). The capacities (item (e)) are based on the *required* leader size, and not on the actual leader sizes. Hence, they are somewhat conservative.

The capacities shown in item (e), Table 6, apply specifically to wall register locations in second-story combinations. As applied to the usual type of second-story floor register combination, with a horizontal offset, the following quotation from Engineering Experiment Station Bulletin No. 188 is pertinent:

"For an equal supply of heat to the furnace, the wall register combination delivered from 15 to 20 per cent more heat through the register face than the floor combination. The inferiority of the floor register combination may be ascribed to the resistance and turbulence at the right-angle elbow in the system at the top of the stack, and to the greater height and motive head of the wall system."

Hence, when floor registers in second-story combinations are used, the carrying capacities shown in item (e), Table 6, should be reduced by 15 per cent.

Valentine Theatre Substitute Ducts

(*Continued from page* 113)

erection labor is much higher because where a metal duct can be assembled on the ground and erected in sections, substitute board ducts (especially in large sizes) must be erected connector at a time and board piece at a time.

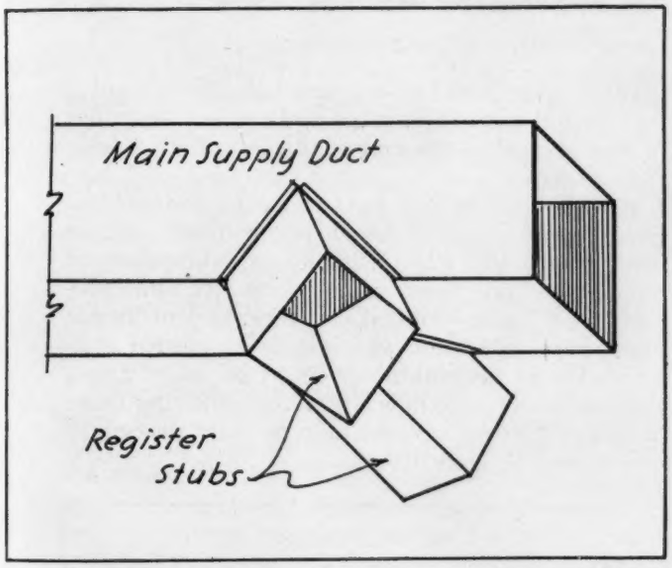
◆

Nyland's Masonite Ducts

(*Continued from page* 109)

of galvanized iron made in a few sizes so that a standard length could be cut to fit the turn. End View A-A shows a typical such change in flow.

Perhaps the most interesting fitting in the job consisted of two opposing 45-degree downward and 45-degree outward branches taken out of the bottom corners of a large main. These mains ran



between trusses and the branches were stubs for registers which directed air downward to the working floor about 30 feet below the main. Since these stubs were cut out of both one side and the bottom and the register is nearly horizontal in the stub, a diamond shape hole in the side and bottom was required. A detail shows the approximate construction and it will be noted that the same type of 90-degree connector was used to join the stub to the main.

The ducts were sectionalized for fabrication and erection about as shown on our typical drawing. All work was done in the job shop, where the Masonite panels were cut with an electric portable saw working along a straightedge mounted on a bench edge. To cut a panel the Masonite was slipped under the straightedge and a mechan-

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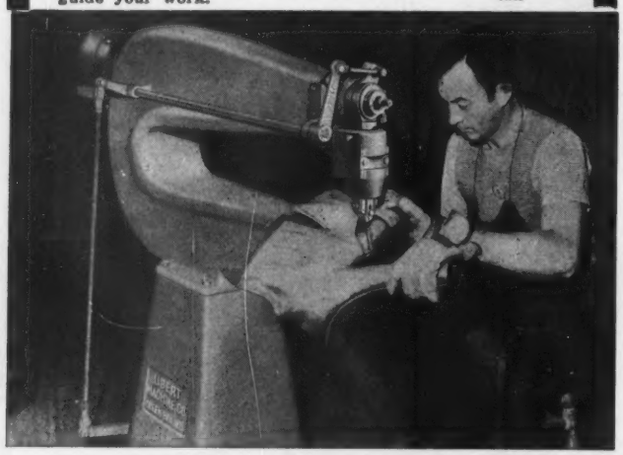

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ic then ran the saw along the straightedge face. Since the Masonite is thin, a typical cut could be made in a couple of seconds. Mostly the saw was used for cuts longer than 48 inches and also for cutting straight lines at any degree from the edge of the sheet so that triangular or rhomboid or trapezoid panels could be cut out with the same ease as a rectangle or square. There was also a 48-inch foot squaring shear used to make straight cuts across width of a sheet.

Any panels not possible to cut under the straightedge were cut with a hand saw.

Sections were fabricated and assembled on the shop floor. Then the section was raised to the scaffold and slipped into the connectors and into the hangers and screwed together. For hangers a 2 by 4 wood strip supported the duct, and this 2 by 4 was, in turn, suspended by 1 by 3-inch wood hangers at each end of the 2 by 4. The top of the 1 by 3 had a short block bolted at right angles and through this block a bolt was run into a Phillips shell in the ceiling.

◆

Heating Demountable, Pre-fabricated Houses

(*Continued from page* 81)

gutter; sheet metal men erected the downspouts; who should put in the tubes and cement the tubes in was argued to the end of the job. Both trades put in tubes.

FPHA finished the project under reorganization of NHA, and the cost per housing unit in this project was $2,963, including fabrication of the house, equipment, shipment to site and erection. The idea is—should the Kingsbury ordnance plant cease operation and houses be needed elsewhere, these demountables could be taken apart and removed to the new site. After studying these buildings during several months, this procedure seems open to some discussion.

CONVENTIONS

1943

Illinois Sheet Metal Contractors Association—Annual convention has been postponed from the usual January date to some later date—probably April.

Jan. 25-27—American Society of Heating & Ventilating Engineers. 49th Annual. Hotel Gibson, Cincinnati. A. V. Hutchinson, Secretary.

Feb. 8-9—Wisconsin Sheet Metal Contractors Association, Inc. 29th Annual. Hotel Schroeder, Milwaukee. Paul L. Biersach, Secy., 225 E. Michigan St., Milwaukee.

Mar. 2-4—The Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association. Annual. Saginaw. E. C. Spraker, Secretary, 1560 Mackinaw Road, Grand Rapids.

Mar. 17-18—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc. Annual. Newburgh, N. Y. Clarence J. Meyer, State Secy., 567 Genesee St., Buffalo.

Aluminum Boxes and Drawers

(*Continued from page* 103)

finished on the cloth wheels. This produced a fine finish that was practically impossible to distinguish from an actual weld and at a fraction of the cost of the latter. This did not produce a weak corner as corner lap seam was interlocked with a notch in the side mould.

10—In order to be sure of a minimum number of rejects by government inspectors, we selected a careful workman from our force and worked out an inspection routine for him. This inspection included missing or faulty welds, alignment of hardware, fit of cover, tightness of rivets, accuracy of dimensions by use of gages and general smoothness of finish. All defective work was "tagged" with defects written on a tag and sent back for correction. Work which successfully passed this company inspection was sent to the area set aside for final cleaning, inspection and packing.

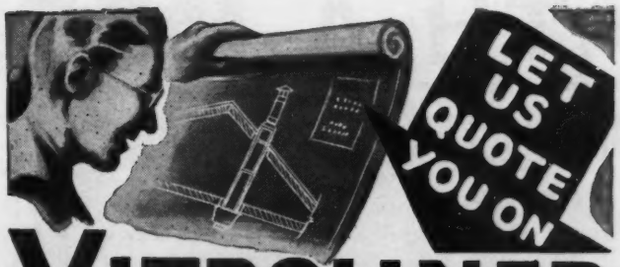
Inspection Shows No Rejects

11—Just prior to government inspection, which was performed in our shop, all work was thoroughly cleaned with powdered "Bon Ami." Since careful handling had produced very few scratches, the finished and cleaned product presented a fine, lustrous finish. Each shipment was stacked as shown in Photo No. 6, with the individual cartons made up and placed conveniently near. They were now ready for the government inspection.

12—Portable benches were set up and covered with paper, for use of the inspectors. These benches were placed to afford ample illumination for the inspectors. One crew of workman supplied the inspectors with the "Boxes and Drawers," while another crew removed them as they were passed, placed them in the cartons and sealed them, ready for the stamp of approval. One man stood by ready to remove and tag any rejected items, with the reason for its rejection. All rejections were for rough spot welds, suspicious looking spot welds, or misaligned hardware. These rejections were few and easily corrected. Corrections were made to the inspectors liking and finally passed. No permanent rejections were made.

Frequent consultations with the government inspectors, during the fabrication of this job, resulted in our receiving help and advice that was invaluable to the final passing and approving of this job. While final inspection was rigid, this help had enabled us to be prepared.

To quote our shop foreman, "Each difficult operation was bathed in our blood." However, and as is usual in such cases, all grief was forgotten in the glow of satisfaction which comes with "a job well done."



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Evaporative Cooling Market

(*Continued from page* 88)

ly engineered or carelessly put together they can spell grief for you and the customer.

It is well to establish an installed price sufficiently high to enable you to give the customer a year's free service. This, of course, means labor and traveling expense to you. If the manufacturer stands behind his product as he should, there will be very little replacement trouble and then at his expense for the parts. Not only do we give this service, but in addition we remove the pump and drain the system at the close of the warm weather and replace it in the spring, at the same time lubricating and seeing that the system is in proper shape for operation. Our sale of new filter pads and belts carries sufficient profit to warrant this added service and builds that friendship with the customer that makes for new customers. The system installed is only as good as the manufacturer and the dealer behind it. We use dealers in towns too distant to service ourselves.

According to available engineering data, the following is a comparison of evaporative cooling and refrigerative cooling:

EVAPORATIVE COOLING-REFRIGERATION COOLING

Approx. C.F.M.	Motor H.P.		Tons of Ice Every 24 Hours	Motor H.P.
2500	¼	Same as	2.5 Tons Refrig.	2.5
3500	⅓	Same as	3.5 Tons Refrig.	3.5
5000	½	Same as	5 Tons Refrig.	5
7500	¾	Same as	7½ Tons Refrig.	7½
10000	1	Same as	10 Tons Refrig.	10

One need not be an engineer or a cooling expert to recognize that there is a vast difference between the initial cost as well as the operating costs of the comparative systems above outlined. Is it any wonder, then, that the prospect who is approached with details which assure him that he can have the advantages of the highest priced air conditioning at a fraction of the cost by using evaporative cooling, is immediately receptive. I have sold many things in my business lifetime, but never anything that sells with the ease of evaporative cooling. The ease with which evaporative cooling is applied to different kinds of establishments is illustrated by its installation by us without previous experience in the cooling field, in drug stores, cafes, taverns, clubs, churches, offices, printing shops, clothing stores and bakeries, etc., without a single unsuccessful installation.

We secure our prospects through our regular newspaper advertising, classified and display, through mailing of literature to known lists and by personal calls. Our best source of new customers, however, is the satisfied user, whom we believe accounts for 90% of our sales of evaporative cooling being house sales.

The photographs show some of our typical in-

stallations. There is a partial view of Woods Drug Store at Lincoln and Weinbach in Evansville, Indiana. This is a rather large suburban store with a soda fountain and lunch department. A great deal of heat, both from the cooking and the large number of customers, made the installation appear difficult, yet it is one of the most comfortably cooled establishments in this area. We accomplished this with two units of 7,500 cu. ft. each mounted on the roof. We dropped ducts, which are visible in the picture, down through the ceiling and located them at equal points from the center of the building, blowing the air down on slanted baffles which distribute the air throughout the room; windows and exhaust outlets are left open on all sides. We were able to use smaller units than were proposed by competitors and gave our customer a saving and satisfaction which is indicated by their letter as follows:

"The Modernaire Cooling system recently installed in our store is working to complete satisfaction.

"The following are a few of the many advantages we have been able to enjoy since the installation:

"It provides instant coolness to one entering without the 'cold shock' given by some mechanical units.

"It provides moisture which aids greatly in keeping cigars and tobacco in good condition, yet without any trace of dampness to customers.

"It circulates the air so completely that no dead air pockets remain.

"It lessens store noise due to the type of installation.

"It provides coolness and proper humidity, thus increasing clerk efficiency.

"It prevents stale odors such as tobacco and food.

"It circulates pure moist air that greatly lessens the collection of dust and dirt in the store, making it easily kept clean.

"Last but not least, IT SATISFIES OUR CUSTOMERS. This alone, without the many other advantages, constitutes the need of the Modernaire Cooling system."

As indicated from the above letter, the moisture in the air from the system helps keep fresh cigars, tobacco and other items which ordinarily dry out, a great deal of the drying out being due to the movement of warm dry air by ordinary fans. Most cigar cases are equipped with water containers or humidifiers which usually run dry unless watched carefully.

In grocery and food markets many of the larger ones have expensive vegetable and produce bins which have sprays that spray a fine mist of moisture over the produce and vegetables to retain their freshness. A similar result is accomplished with evaporative cooling without added expense.

Print shops find evaporative cooling helps keep down static electricity in their paper stock and aids in its handling.

Another photograph shows Mrs. Stephens Cafe at Vincennes, Indiana, which seats over 100 peo-

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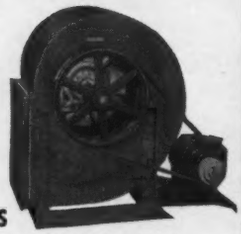

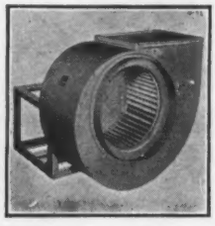

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BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
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ple and has a rather high ceiling. Cooling was accomplished by mounting two units on the rear of the roof and the installation of ducts from the rear which bring in the fresh, cooled, filtered air and completely changes the air every two minutes.

Another installation in a food market introduces the air from a unit over the washroom and distributes from a grill in the corner of the store. The grocery store field has not been scratched on evaporative cooling. It not only comfortably cools, but it keeps down dust and helps retain the freshness of vegetables, fruits, groceries.

Evaporative cooling has made rapid strides in the past three years, yet it is little known in many places. Manufacturers are now developing new and advanced ideas for post-war use. National advertising, dealer organization, manufacturers' helps and many other things are underway which will contribute to the momentum that is sure to speed the sale and popularity of evaporative cooling, once Messrs. Hitler, Hirohito and Mussolini are disposed of. The dealer who awakens to the possibilities and gains all the knowledge possible between now and that time is the one who will profit most from this latest boon to mankind, which puts within reach of the most humble establishment comfortable cooling for self and patrons.

◆

No Metal Ducts

(*Continued from page 77*)

is the engineers' statement that under test almost no temperature drop is shown between furnace and register and that no noise can be heard."

Fire Resistance Test Favorable

In submitting these photographs of the evolution of the Lock Joint, Mr. Klomparens sent another photograph showing his three daughters standing on a section of wood moulding-board duct. The story behind this piece of duct work is interesting. This 8 by 16-inch piece of duct was installed on a 26-inch firepot heater and all the heat from a red hot furnace was put through the duct leaving through the 6 by 12-inch opening in the side. The photograph shows the ends of the moulding in the foreground are charred where they connect to the casing but no effects are shown 24 inches from the casing. This test was made by a member of the Bureau of Standards for a one and three-quarters hours test period.

Thermometers inserted through the holes near the charred ends within three inches of the casing, showed 475 degrees, while thermometers at the register opening showed 235 degrees. Since this test the piece of duct has been left out in the sun and rain for more than six months and is still as tight and strong as when first assembled. It now supports three persons as shown in the photograph.

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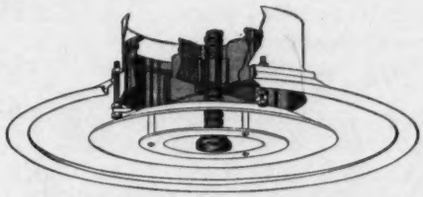
AIR VOLUME AT YOUR FINGER TIPS

. . . without the sacrifice of any of the benefits of perfect air diffusion. This is made available through the new KNO-DRAFT* Air Diffuser equipped with Type DEE Air Volume Control.



Cutaway diagram of Kno-Draft Air Diffuser equipped with Type Dee Air Volume Control

Designed to complement the function of the diffuser, it permits varying the air *quantity* without affecting the *characteristics* of the air distribution.

Furnished completely assembled within the diffuser and adjusted—ready to operate.

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SCHAEFER BRUSHES
BUY SCHAEFER-IT'S SAFER

Large Ducts Of Substitute Board

(*Continued from page* 107)

is durable, neat in appearance and takes a good paint job. It also compares favorably in cost with metal casings plus insulation. Sheet metal workers readily adapt their skill to the handling of this material and as a substitute it is within their labor jurisdiction.

Other plastics sponsored for duct work should be judged according to their fire resistant qualities, moisture absorption, weight and surface friction. Any material which is combustible or readily absorbs moisture will not pass fire underwriters' tests or city codes for sanitary requirements. Other substitutes for sheet metal which are still in use are clay tile, ceramics and other baked products fitted and erected by sheet metal workers.

As to use after the war, we know that sheet metal, when used to convey air, has inherent smooth surface, sanitation, approved status by fire underwriters, and a maximum amount of surface it can cover per cubic foot with lesser bulk. Also custom and usage have developed men skilled in the art of fabrication and erection of sheet metal; asking them to use substitutes naturally is more costly in the initial stages of working a new material.

There is another strong point in favor of sheet metal; that is in making transition pieces when changing from one shape to another. There are always occasions when unforeseen interference is caused by structural requirements, piping, etc. It has always been practicable to measure and fabricate such sheet metal pieces in the field; the adaptability of sheet metal cannot be matched by any substitute.

◆

Buy-in-Advance Plan

(*Continued from page* 53)

cate" may not bear the exact face value of a furnace, but can be in some standard denomination like war bonds. Thus, if a furnace cost $338.00, the owner might "buy" a certificate for $350.00 or $400.00.

But one thing the certificate will do—it will assure the purchaser of prior right to one of the first furnaces produced by the manufacturer. How great a stimulant to orderly, assured postwar production this will be to manufacturers going out of war work and into peacetime production is easy to see.

At this time it is just an idea or proposal and we await further announcements. But if a plan comes out of it all, it may well be a real boon to dealer, jobber and manufacturer, and, as an industry, we should follow the development closely.

Dingle — Taxes For 1943

(*Continued from page* 120)

Acts for many years. There are a great many people who think of corporations as something possessed of vast wealth, belonging to rich people; therefore think it proper to tax them at excessively high rates. As a matter of fact, the vast majority of the corporations in the United States are small, financially speaking, owned by a few small people who have pooled their capital for the purpose of carrying on business. We urge readers to keep in mind that the profits of a corporation belong to the individual stockholders, and that after the corporation pays taxes on its income and pays out the remainder to its stockholders, they are again taxed on those dividends.

Normal Tax

This tax remains substantially as it was last year. There is no specific exemption. The first $5,000.00 of income is taxed at 15%, the next $15,000.00 at 17%, and the next $5,000.00 at 19%. Corporations having net income in excess of $25,000.00 are subject to a special tax treatment. If income is in excess of $25,000.00 but not greater than $38,461.54, the first $25,000.00 is taxable at the graduated rates given above, and that above $25,000.00 is taxed at 37%. If income is above $38,461.54, a flat rate of 24% applies on all income. (See Excess Profits Tax.)

Surtax

This tax first appeared in 1941, and this year the rate of 10% applies on income up to $25,000.00. If the income is in excess of $25,000.00, but not in excess of $50,000.00, the first $25,000.00 is taxable at 10% and the next $25,000.00 (or any part thereof) at 22%. If the net income is in excess of $50,000.00, a flat rate of 16% applies on the entire income. (See Comments under Excess Profits Tax.)

Declared Value Excess Profits Tax

This tax remains unchanged; the old rates of 6.6% and 13.2% apply. This tax is closely tied to the Capital Stock Tax, the amount of the declared value determining the exemption from this tax. As before, the declaration of value should be at least ten times the estimated net income for the year. Heretofore it has been necessary that the Capital Stock Tax return be filed on or before July 31st of each year. This year, due to the long delay by Congress in passing the Revenue Act, the return was due on or before November 28th, thus permitting corporations to make more accurate estimates of 1942 income for use in declaring values in the 1942 Capital Stock tax return. The Capital Stock tax rate this year is $1.25 per $1,000.00 of declared value, which in turn gives 10%, or $100.00 exemption from

(*Continued on page* 160)

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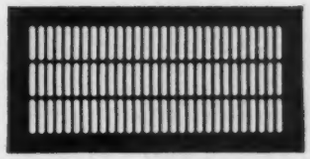

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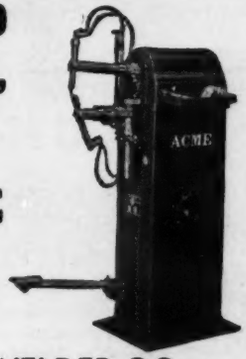

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Reginald Wilfred Sykes, formerly head of the **Milcor** Specialties Department, is now in uniform as Lieutenant (Junior Grade) in the United States Naval Reserve, and was assigned to aviation duties. He reported for active duty on October 16th at the Naval Air Station, Quonset Point, Rhode Island.

Klauer Manufacturing Company, Dubuque, Iowa, supplied 11,000 feet of Ridgolator (more than two miles) for the Anniston Ordnance Depot. The shipment required about twelve car loads of this heavy-duty, streamlined ventilation equipment.

Another ridge-type ventilation installation was for an electric furnace building of the Carnegie-Illinois Steel Corporation.

Patented longitudinal and cross baffles — or air hurdles — are strategically positioned to baffle parallel wind streams. Corrugated storm bands eliminate vibration.

Ilg Electric Ventilating Co., Chicago, is engaged 100 percent in war work and about 45 Ilg men are in the armed forces, according to **John M. Frank,** president and general manager. The company employs 550 people.

Mr. Armistead, who represented Ilg in Nashville, is now with the War Production Board in the Division of Contract Distribution of the Nashville Office.

Comptroller **L. F. Steele** has been appointed Lieutenant (Junior Grade) in the U. S. Navy, and joined his Pensacola, Florida, outfit, where he is assistant disbursing officer.

The Lincoln Electric Company, Cleveland, according to President **J. F. Lincoln,** has a production record of over $30,000 per worker—made at the selling price of their product.

Carrier Corporation, Syracuse, N. Y., reports their business at present is practically 100 percent war orders. A large percentage of employees have subscribed to payroll deduction for war bonds.

One of the first twenty-five concerns to receive the Navy "E" the company has just been awarded the Army-Navy "E" with two stars for one year of continuing excellence in war production. One hundred women have been employed recently for factory production.

Carrier employees contributed to a jeep which was presented to the U. S. Army. Awards for attendance, suggestions and slogans are made regularly. 4,946,048 pounds of scrap have been collected.

About fifty former employees are now in service, among them:

Wm. H. MacDonald, Sales Engr., 2nd Lieut., Picatinny Arsenal, Dover, N. J.

Eric Roos, Engineer, Capt., Bolling Field, Washington, D. C.

Daniel Shepherd, Sales Engr., Lieut., Ordnance Dept., Arlington, Va.

Harry S. Traynor, Engineer, 2nd Lieut., Corps. of Engineers, Rome Air Depot, N. Y.

R. H. Braxton, Sales Engr., Pvt., Anniston, Ala.

Stephen N. Dick, Adv. Mgr., Pvt., Fort Bragg, No. Carolina.

Cecil Eskola, Sales Engr., (Army) Tacoma, Wash.

R. L. Hogue, Com. Refr. Sales Engr., Ensign, Bureau of Ships, Washington, D. C.

W. H. Kitchen, Engineer;

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Buy U. S. War Bonds
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Div. of H. D. Conkey & Co.
MENDOTA, ILLINOIS

★War Time Trade News★

Sub. Lieut. (S. B.) (Canadian Navy), Ontario, Canada.

Vernon Alexander, Sales Engr., Lieut. (Navy), Bethesda, Md.

Ledyard Avery, Application Engr., Air Force Section (Army), Dayton, Ohio (Wright Field).

William R. Alexander, Engineer; First Lieut. (Army), Lawton, Okla.

Edward Billings, Service Engr., Lieut. (Army), New River Ordnance Plant, Pulaski, Va.

Paul A. Bishop, Engineer, Lieut. (Army), Electronics Training Group, (c/o Postmaster, N. Y.).

James P. Butler, Legal Advisor, Pvt. (Army), Bolling Field, Washington, D. C.

C. I. Elliott, Centrif. Refrig. Sales, Lieut., J. G. (Navy), Solomons, Md.

Stanley H. Ellison, Refr. Spec. Sales, Lieut. Col. (Army), War Dept., Washington, D. C.

George F. Kent, Asst. to President, Major (Army), Roswell Flying School, Roswell, N. M.

The company assumes that many of their men have already seen service, based upon the guarded comments made in letters received from these men. Two former employees have already lost their lives in service.

The Ruberoid Company, New York City, has over 200 employees in service. Over 90 percent of more than 3,000 employees are purchasing war bonds through payroll savings.

Directly or indirectly, over 80 percent of present business consists of war orders.

May Oil Burner Corporation, Baltimore, Maryland, is working one hundred percent on war orders—hydraulic equipment.

Edward E. Yaggy, Jr., President; **George I. Chinn,** Chief Engineer; and **Charles F. King,** Engineer, are already in service. Quite a few former employees have seen action. Quite a few are in the Pacific area and already one has paid the supreme sacrifice.

Will-Weld Mfg. Co., Inc., Omaha, Nebraska, reports 100 percent of their present business consists of war orders, subcontracts, and the company is furnishing welding machines for many of the shipyards, aircraft manufacturers and tank manufacturers. They recently furnished 150 large industrial machines to the General American Transportation Corporation of Chicago for building invasion boats.

Employees are purchasing defense stamps—100 per cent.

The following are now in service:

C. M. Dempsey, Chief Engineer—Stationed in Omaha in the Ordnance Dept.

Francis Urzendowski, Welder—Stationed in New Guinea in Engineering Dept.

Edward Godek, Coil Winder—Studying in the Signal Corps.

Ray Carter, General Construction—Aboard U. S. S. King Battleship.

Ed Brandt, Helper—(Army).

Stanley Sobczyk, Coil Winder—Stationed in Army Camp in Arkansas.

Frank Galus, Helper—(Army).

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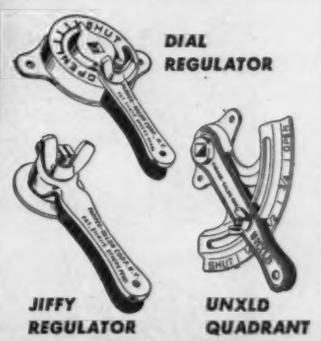

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For the duration more critical metals must be used for the War Effort . . . less to build furnaces . . . but repair parts for present installations are available for immediate delivery. Order Vernois Repair Parts direct from Mt. Vernon and be sure of perfect fit and highest efficiency . . . and after the duration, line up with Vernois and give your customers the greatest dollar-for-dollar value furnace on the market.

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Grand Rapids, Michigan

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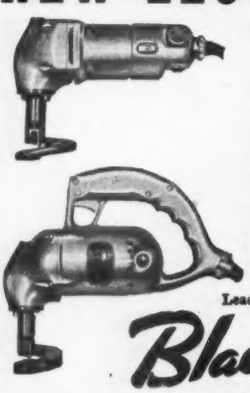
Cut Metal, Faster, Easier



Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as ¾". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped, Universal motor, designed for high speed, trouble-free service. Two sizes—18 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 782 Penna. Ave., Towson, Md.

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Since 1869

the 6.6% and 13.2% Declared Value Excess Profits tax. While it is too late to give advice for fixing the 1942 declared value in the Capital Stock tax return, we will discuss the advantage of properly filing the return. The law as it now stands permits an arbitrary declaration of value each year. To illustrate the proper procedure, we will use an estimated net worth (or book value) of $100,000.00 and estimated profits for 1942 of $15,000.00.

If the Capital Stock tax return was filed showing a declared value of $150,000.00, a tax of $187.50 would be paid, and there would be an exemption of $15,000.00 from the Declared Value Excess Profits tax, resulting in no liability under this particular tax.

If, however, the Capital Stock tax return was filed showing $100,000.00, the Capital Stock tax would be $125.00, and there would be an exemption of $10,000.00. Income of $15,000.00 minus the exemption of $10,000.00 leaves $5,000.00 taxable at 6.6%, or $330.00. Thus, while $62.50 was saved in the Capital Stock tax return by declaring only $100,000.00 instead of $150,000.00, such a declaration results in a Declared Value Excess Profits tax of $330.00, or a net increase in tax of $267.50. It is, therefore, a safe plan to keep the Declared Value high enough to cover an exemption (at 10%) at least ten times the estimated annual net income. (See Comments under Excess Profits tax.)

Excess Profits Tax

This tax, commonly called the War Profits tax, is this year a flat 90%, while last year it was graduated from 35% to 60%. This year the 90% rate applies on "adjusted excess profits net income," which is the net income minus either of the following credits: 95% of the average net income for the four pre-war years, 1937-38-39-40, with some special relief provisions; or 7% of invested capital. In addition to one of these credits, a specific exemption of $5,000.00 is allowed. All income above these credits is presumed to be "war profits" and this year will be taxed at 90%. Profits so taxed are not subject to tax under either of the other three taxes imposed on corporate income. In other words, the income of a corporation is divided into two classes. The first class is that income not in excess of 95% of the averaged income for the four pre-war years, plus $5,000.00 which is, with minor adjustments, subjected to the Normal Tax, the Surtax and the Declared Value Excess Profits tax. The other class being in excess of pre-war profits, therefore presumed to be war profits, is taxed at 90%.

The average small corporation, having a more or less fixed annual income, will find this War Profits tax of 90% falling lightly, if at all, on their income. The four pre-war years averaged profits plus $5,000.00 specific exemption will usually provide ample exemption to cover normal income. Only those companies having "war profits" will be hit by this tax, which will take

90% of those "war profits," leaving only 10% to the company.

Corporation or Partnership?

To sum up the tax situation of the average small corporation having no "war profits" there will be the normal tax, ranging from 15% to 24%; the surtax ranging from 10% to 16%; and possibly some tax under the Declared Value Excess Profits tax at 6.6%. If the Capital Stock tax return was properly prepared, this particular tax may be avoided.

A corporation having a pre-war earning record substantially equal to its 1942 income will pay for 1942 approximately 30% to 40% of its income (if not in excess of $50,000.00) as tax. Such a business, owned by two or three persons, and operated as a partnership would result in the individual owners paying substantially the same percentage of the income as taxes. But we are prone to forget that after the corporation pays its income tax, it pays to its owners, the stockholders, all or some part of the earnings as dividends. These dividends are subject to tax as income to the stockholders, thus actually resulting in double taxation. In its final state, a corporation is still a very expensive manner of carrying on a small business owned by a small number of people. A partnership or individually owned and operated business is the most economical method of operation.

Aside from the Income Tax problems, a corporation must include its active stockholders as employees in determining its liability for State and Federal Unemployment Compensation taxes aggregating 3% of its pay roll. A partnership or individually owned business is not required to include, as employees, the partners or owner.

Close Cost Control Essential

With the new income taxes taking such a large percentage of the income, the business man must take proper care to include in his pricing of his goods, wares and service this increased expense or he will find his final net profits greatly reduced. But now with rationing of materials, the scarcity of proper labor for pre-war activities, and price ceilings, the business man is hemmed in on all sides by conditions which, for a while at least, will prevent profitable operations. Volume of sales will decrease; gross profit will be frozen; and operating expenses will in all probability increase. It therefore seems essential that the businessman keep a very close watch on his operations and so far as is possible keep his business under control, decreasing overhead expenses as sales volume decreases. If, on the other hand, he has an increased sales volume, due to war conditions, either directly or indirectly, he can rest assured that he will in the end pay a very substantial part of such extra profits as tax.

These are strenuous times and it is necessary for businessmen to keep close touch with their business operations.

IRONSET . . . . .

The unexcelled furnace cement. It remains elastic, withstands higher temperatures. Will not shrink, crack, bloat or blister. This improved and perfected product is sold on a money-back guarantee that you will be more than satisfied. Available in 5 and 10-lb. cans—50 and 100-lb. drums.

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74 McDowell St., Columbus, Ohio

Rubyfluid

GRAY'S FULL SIZE BLUEPRINT PATTERNS

6 piece ship ventilator patterns, up to 24" dia.
45 degree branch patterns, from 3" to 24" dia.
Elbow patterns, 2" to 9 piece, up to 40" dia.
Skylight Patterns, putty bar, Hip, Gable, Flat.
Skylight Puttyless, for Hip, Gable, and Flat.
Skylight Turret and louver patterns.
Roof Ventilator and base patterns, up to 36" dia.
Revolving Ventilator patterns, up to 15".

Write for pattern circular giving full information

G. L. GRAY • 509 Grand Avenue NEW HAVEN, CONN.

PORTLAND • SAN FRANCISCO • LOS ANGELES
SALT LAKE CITY • DENVER • EL PASO

U. S. GRANT SUPPLY CO.
3625 So. Grand Ave. —affiliate of— Los Angeles, Calif.

HAROLD W. WINNINGHAM & COMPANY
HEATING, AIR CONDITIONING, ELECTRIC BAROMETRIC CONTROLS, POWER . . . AND GENERAL EQUIPMENT
7803 Eleventh Avenue Northeast
Telephone Vermont 3867
SEATTLE, WASHINGTON

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Conco Corporation
Conco Engineering Wks.
Sampsel Time Control, Inc.
H. D. Conkey & Company
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Rock Island Register Co.
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WESTERN STATES REPRESENTATIVES AND ENGINEERS FOR EASTERN MANUFACTURERS

AMERICAN ARTISAN Service Section

ACCURATE REVOLVING VENTILATORS

Due to the critical metal situation the popular line of Accurate Revolving Ventilators and Sheet Metal Bases will come through for the duration in black iron and be coated with a heavy covering of asphaltum paint for protection against weather, so you can readily get them without restrictions.

Accurate Revolving Ventilators have been often approved by both the Army and Navy Officers, so do not hesitate to use this efficient ventilator on these jobs.

Accurate Revolving Ventilator and Cast Base

CARRIED IN STOCK BY FOLLOWING JOBBERS

Ace Hardware Co., Chicago, Ill.
Auer Steel & Furn. Sup. Co., Milwaukee, Wis.
Behler-Young Co., Grand Rapids, Mich.
Bussey Pen Products Co., Chicago, Ill.
Cedar Rapids S. M. Co., Inc., Cedar Rapids, Ia.
Contractors Supply Co., Lansing, Mich.
Chicago Metal Mfg. Co., Chicago, Ill.
Chicago Furnace Supply Co., Chicago, Ill.
Frank Colladay Hdw. Co., Hutchinson, Kans.
Dayton-Hessler Co., Syracuse, N. Y.
Huron Pipe & Supply Co., Port Huron, Mich.
F. J. Kerscher Co., Manitowoc, Wis.
Livingston Repair, Marshall, Mich.
Mohr-Jones Hdw. Co., Racine, Wis.
Muntz & Lea Co., Elgin, Ill.
Northwestern Stove Repair, Chicago, Ill.
J. G. Poorman, Tinley Park, Ill.
Poehner & Dillman, Joliet, Ill.
Republic Metals, Inc., Chicago, Ill.
Richards & Conover Hdw. Co., Kansas City, Mo.
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Sheet Metal Products Co., Peoria, Ill.
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Wyeth Hdw. & Mfg. Co., St. Joseph, Mo.
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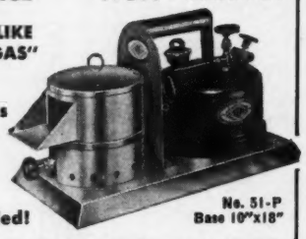
ACCURATE MFG. WORKS
2336-38 Milwaukee Ave., Chicago, Ill.

UNIQUE GASOLINE TINNER'S FURNACE • NON-TILTING!

FLAME LIKE "CITY GAS"

Silent Odorless



Finely Controlled!

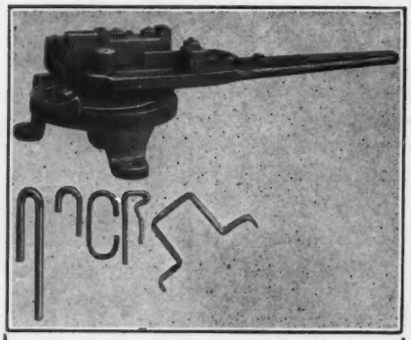
No. 51-P Base 10"x18"

Improved burner concentrates flame on irons—heats a 4-lb. pair in 8 minutes—melts 15 lbs. of solder in 10 minutes. Runs 6 to 12 hours on one filling. Windproof—burner shield speeds starting; protects burner and jet.

Simple burner unit is easy to clean or replace. Orifice is cleared automatically as valve is closed. Heavy gauge welded steel tank has powerful pump, funnel filler, and fuel valve; tank and burner unit bolted rigidly to welded steel pan 10"x18".

See upright "burner over tank" model—

UNIQUE MFG. CO., Inc.
221 W. WALTON, CHICAGO, ILLINOIS



THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

L. R. EVANS MACHINE COMPANY
SANDWICH, ILLINOIS

Better for Every Spraying Purpose

MARLEY SPRAY NOZZLES

"Tops" for Air Washing, Humidifying, Brine Spray Lofts, etc. Marley nozzles lead all in sales and in profits to you.

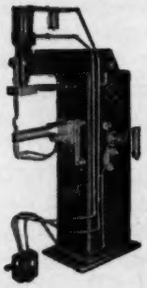
*Finer, more uniform spray.
*Effective operation at Low Pressures. * No internal parts to clog or wear.

MARLEY CO., INC. Write for Literature Now! Kansas City, Kansas

Alphil Spot Welders

More Production—Lower Cost

used in leading Aircraft Industries and many other Government plants.



• Welders built for both foot and air operation. Rocker Arm, Press Type, Lower Adjustable Arms Straight Up and Down, also Swivel Type.

Problems? Consult Us
For literature and prices write to Dep't A J

Alphil Spot Welding Co.
431 W. Broadway
New York, N. Y.

DROP HAMMER STAMPINGS FOR AIRCRAFT AND METAL SPINNINGS

Miller & Doing

60 York St. Brooklyn, N. Y.

TOOLS for the ROOFING CONTRACTOR

ASBESTOS SHINGLE CUTTERS
AXES
BEAMS
BRACKETS
BROOMS
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CALKING GUNS
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DIPPERS
HATCHETS
HOISTS—PORTABLE
HOISTING WHEELS
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KNIVES
LADDERS
LADDER JACKS
KNOT BRUSHES
MOPS: JEWEL, FREY PATENT, CABLE CORD, SOFT YARN
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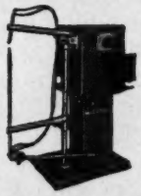
MOP HANDLES
NAILS, CONCRETE
ROPE
SCRAPERS
SLATERS' TOOLS
TROWELS
WHEELBARROWS

FRANK P. FREY & CO.
2634 W. MADISON STREET CHICAGO, ILLINOIS

WELDING HEADQUARTERS



Electric welding equipment of every description to weld from a watch case to a door. Special or standard SPOT WELDERS from ¼ to 500 K.V.A. A.C. Arc Welders from 100 to 400 Amps. We invite contract Spot Welding in large or small quantities.

EISLER ENGINEERING CO.
CHAS. EISLER
761 S. 13th St. (Near Avon Ave.) Newark, N. J.

BLOWERS — FANS — EXHAUSTERS

THOROUGHLY REBUILT, for perfect performance. All types; all standard makes. All sizes including the big ones. Hundreds in stock, meeting all requirements. Attractive prices. Fully guaranteed. Expert engineering counsel. GENERAL BLOWER CO., Engineers, 403 North Peoria Street, Chicago, Illinois.

Trademark
YAGER'S Soldering Salts — Paste
Reg

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

½ lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.

ALEX. R. BENSON CO., INC., HUDSON, N. Y.

Save Money, Time and Muscle

Drill Concrete with the 'De-All" Combination Electric Hammer and Drill. Set expansion bolts 10 to 20 times faster than with hand tools. Drills concrete, brick, stone, metal, wood. Easy to maintain. Weighs 15 lbs. Drills to 1¼" in concrete. 2400 blows per min. Bulletin 400. Phone Austin 9866.

WODACK ELECTRIC TOOL CORPORATION
4044 W. Huron St., Chicago, Ill.

CRACK DOWN ON Spatter COSTS

USE SPATTER-NOX

Reduces weld spatter 50-75%; cuts cleaning time 50%; increases welding speed 30-50%. Inhibits rust and is a good foundation for paint. Simply brush or spray on. Covers 650-700 square feet per gallon.

AND SPATTER-OFF

A companion water-soluble product. Used where welds are to be pickled for galvanizing, sherardizing or plating. Spatter-Off is non-fuming. Covers 500 square feet per gallon.

Write for Latest Descriptive Bulletin

UNIVERSAL POWER CORPORATION

4298 Euclid Avenue Cleveland, Ohio

A TIME SAVER

CHAMPION DRAW ACTION PIPE CRIMPER

Length—14 Inches
Weight—one lb. 10 ozs.

Crimps plain round, square and rectangular pipe—quickly, perfectly and easily. Can be used in the shop or carried conveniently in the tool kit to outside jobs. Appreciated by those who install warm air furnace pipe, wall stacks, air ducts, smoke, conductor and water heater vent pipe, etc.. Price $2.50 f. o. b. Factory.

Jobbers and Installers: Write for full details today

CHAMPION TOOL COMPANY

376 West 41st Place, Los Angeles, Calif.

Classified

SITUATIONS WANTED

SALES MANAGER with top heating company. Can assist in war work for duration and can formulate new merchandising campaign and develop new products so as to be all set when war ends. Have had 20 years' successful selling and executive experience in heating field as retailer, wholesaler, manufacturer, salesman, branch manager, division manager and sales manager with over 400 branch stores. Appointment desired. Address Key No. 562, American Artisan, 6 N. Michigan Ave., Chicago, Ill.

SITUATION OPEN

WANTED—SHOP FOREMAN FOR WAR WORK NEW YORK VICINITY

A well established and growing Sheet Metal Contracting organization has opening for an experienced man capable of managing shop, permanent position with excellent opportunity for advancement for the right man. Write stating qualifications, draft status, experience and salary expected. Address Key No. 560, American Artisan, 6 N. Michigan Ave., Chicago, Ill.

WANTED—Several Sheet Metal Workers for layout work, assemblies and erectors for general job work on duct and blow pipe work in northern Ohio city. If employed on essential war work do not apply. State age, race, experience, abilities and physical condition. Address Ben Callahan, 25 Kent St., Akron, Ohio.

MISCELLANEOUS

PATENT YOUR IDEA—Inventions needed by industry. Write immediately for two free books, "Patent Protection" and "When and How to Sell an Invention." Fully explains many interesting points to inventors and illustrates important mechanical principles. With books we also send "Evidence of Invention" form. Prompt service, reasonable fees, forty-five years' experience. Avoid risk of delay. Address: Victor J. Evans & Co., Registered Patent Attorneys, 774-A Merlin Bldg., Washington, D. C.

FOR SALE

SMALL STOCK of Hardware and Tinners Tools, Southeastern, South Dakota Town. Address Knudson & Olson Hdw., Flandreau, So. Dakota.

AMERICAN ARTISAN Service Section

IN CHICAGO STOCK!

QUICK DELIVERY!

APRON BRAKES
BOX & PAN: 8' 10 ga. 7' 14, 5' 14;
HAND: 10' 16; 8' 12, 8' 14, 8' 16, 8' 18; 6' 13;
BOX & PAN: 8' 10 ga., 7' 14, 4' 14, 5' 14;

PRESS BRAKES
D & K: 6' 14 ga.; 10' POORMAN;
OHL: 10' 14 ga.; 4' 16 ga.; 5' 14 ga.; 66" 14 ga.;

OBI PRESSES
No. 5 CONSOLIDATED; Nos. 4 & 5 BLISS;
No. 5A TOLEDO; Nos. 5, 4½ & 4 TOLEDO;
No. 3 CONSOLIDATED; No. 2 WALSH;

DOUBLE CRANK PRESSES
No. 3-C BLISS, 5⅝" stroke; 48¾" between;
No. 4-80 W&W 10" stroke; 4" shaft;
No. 01-C TOLEDO, 6" strke; 42⅛" between;
No. 91-B TOLEDO, 6" stroke; 32⅛" between;
No. 485½ HAMILTON; 12" stroke; 85" between;
No. 605½ HAMILTON, 8" stroke; 61" between;

STRAIGHT SIDE PRESSES
No. 64 CONSOLIDATED, 8" stroke; and 4¼" shaft;
No. 58 NIAGARA, 3½" stroke; Bed 21"x22";
No. 54 TOLEDO, 5" stroke; 4" shaft;

MISCELLANEOUS ITEMS
No. E-3 KELLER DIE SINKER;
No. 3 PRATT & WHITNEY DIE SINKER;
BILTON CAM MILLER; No. 45 PRODUCTOMATIC;
Nos. 2-B & 3 MANVILLE THREAD ROLLERS; ¼" capacity.
⅛" & 5/16" SHUSTER WIRE STRAIGHTENERS; 24 & 30 Ft. cutoffs; 7/16" WELLS;
No. 3 NILSON FOUR SLIDE MACHINE;

POWER ROLLS
7½ Ft. 10 ga. NIAGARA; 8' 20 ga. NIA;
36"x4" NIAGARA; YODER FENDER ROLL;
ANGLE: 6x6x¾" WICKES; M.D.;
2—WILLIAMS & WHITE ANGLE & BENDING;

ROLLER LEVELLERS
27" NILES; 80" McKAY; 5' POND;

SHEARS
POWER: 10' 16 ga. OHL; 8' 18 ga.; 6' 18 ga.;
ANGLE: 6x6x¾" LONG & ALSTATTER; M.D.;

—SPECIAL—
12 FT. 1¼" HILLES & JONES; 36" gap; Holddown; Motor drive with motor;
8 FT. 1¾" LONG & ALSTATTER; 36" gap; Holddown; Motor drive with motor.

SPOT WELDERS
250 KVA FEDERAL PRESS TYPE PROJECTION; Toggle movement of ram; 60c, 440 v.;
20 KVA ACE 60c, 230 v.; 24" thr.;
20 KW THOMPSON; 220 v. 60c; 12" thr.;
20 KVA WINFIELD; 60 c, 440 v.; 24" thr.;
55 KVA SWIFT BUTT WELDER;
25 KVA THOMPSON SEAM WELDER;

FLOOR LATHES
No. 16 GISHOLT SIMPLIMATICS;
14"x12' CARROLL JAMIESON;
14"x8', 16"x8', 18"x10' BRADFORD;
16"x8' MONARCH; 15"x5' FLATHER;

SEND FOR OUR CATALOG 404

INTERSTATE MACHINERY CO., INC. — YARDS 5800
1433 W. PERSHING RD., CHICAGO, ILL.

Processing—Tool Design—Cost Estimating Service

Expert Engineering of

ANY SHEET AND ALLIED METAL PRODUCT

Save money and worry by consulting experts in the fabrication of war essentials and sub-contract parts.

Will come to your plant or advise by mail.

Address Key 561, American Artisan, 6 N. Michigan Ave., Chicago, Ill.

"CENTRAL-WEST" can furnish your Sheet Metal Machinery Requirements

● Steel Hand Brakes ● Press Brakes ● 'Rex' Spot Welders
— LOCKFORMERS —
● 'Pexto' Shears, Folders, Rolls, Rotary Machines, Etc.
● Whitney Tools ● Electric Shears, Drills ● Shop Tools
— Smith Cleat Benders —

Complete Line of Sheet Metal and Ventilating Supplies

FRED E. MILLER—"Always Ready to Serve You"—N. A. LINDVALL

CENTRAL-WEST MACHINERY CO.

Not Inc.

335 S. Western Ave. - Haymarket 8361 - Chicago, Illinois

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We will repeat! . . .

SEVERAL TIMES in our history we have abandoned forge, farm, and shop to win liberty—and having won, shelved the art of war and built the biggest industrial structure the world has ever known. Again we are battling in liberty's defense, and after victory is assured industry will hum again with new interests, new ideas, new progress. Yes, we will repeat.

DOWAGIAC *Steel Furnace Company*

DOWAGIAC MICHIGAN

Section of

JANUARY, 1943

AMERICAN ARTISAN

1943

DIRECTORY

OF WARM AIR HEATING, RESIDENTIAL AIR CONDITIONING AND SHEET METAL PRODUCTS

Section 1.—Products Classified . . . . Page 166

If you want to know the names of one or more manufacturers making a certain product, look in Section 1, where products are classified alphabetically in directory style with the noun governing (for instance, Warm Air Furnaces are listed as Furnaces, Warm Air).

Section 2.—Trade Names . . . . . Page 221

If you have the trade name of a product and want to know who manufactures it, look in Section 2, where trade names are alphabetically listed. Trade names the same as or identifiable from the company name are not listed. Manufacturers with such trade names can be readily identified under their product classifications in Section 1.

Section 3.—Manufacturers' Addresses . . Page 237

For the complete name and address of any manufacturer, look in Section 3.

● The manufacturers whose names are dotted throughout the listings advertise their products in this issue. Turn to Index to Advertisers, page 252, for the page on which you will find the advertising of any of these manufacturers.

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Section of

American Artisan

1943 DIRECTORY OF WARM AIR HEATING, RESIDENTIAL AIR CONDITIONING AND SHEET METAL PRODUCTS

Section 1—PRODUCTS CLASSIFIED

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ADSORBERS, ODOR

Airox Company, New York City. (Odor Neutralizer)
Betz Corp., Hammond, Ind.
Carbide & Carbon Chemicals Corp., New York City.
●Connor Engineering Corp., W. B., Dorex Div., New York City.

AIR CONDITIONING FURNACES

See Furnaces, Warm Air, Air Conditioning

AIR CONDITIONING UNITS, CENTRAL PLANT, SUMMER

(Self-contained fan, filter and cooling coil unit for connection to refrigerating compressor or cold water supply with duct distribution of air)

Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Airtemp Division, Chrysler Corp., Dayton, O.
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
American Blower Corp., Detroit, Mich.
Baker Ice Machine Co., Inc., Omaha, Nebr.
Ballantyne Company, Omaha, Nebr.
Betz Air Conditioning Corp., Kansas City, Mo.
Blower Application Co., Milwaukee.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
●Clarage Fan Co., Kalamazoo, Mich.
Conditionaire Unit Company, Chicago.
Curtis Refrigerating Machine Co., St. Louis.
Drayer & Hanson, Inc., Los Angeles, Cal.
Fairbanks, Morse & Co., Chicago.
Fedders Mfg. Co., Inc., Buffalo, N. Y.
Forman Air Conditioning & Eng. Co., New York City, (freon)
Frigidaire Division, General Motors Corporation, Dayton, O.
General Air Conditioning Corp., Cincinnati.
General Electric Co., Bloomfield, N. J.
General Refrigeration Division, Yates-American Machine Co., Beloit, Wis.
Gevernair Corp., Oklahoma City, Okla.
Hastings Air Conditioning Company, Inc., Hastings, Nebr.
Howe Ice Machine Co., Chicago.
Ilg Electric Ventilating Co., Chicago.
Jaden Manufacturing Co., Inc., F., Hastings, Nebr.
Kauffman Air Conditioning Corp., St. Louis.
Kennard, Sam, Inc., St. Louis.
Kramer Trenton Co., Trenton, N. J.
Lennox Furnace Co., Marshalltown, Ia.
McCord Radiator & Mfg. Co., Detroit.
McQuay, Inc., Minneapolis, Minn.
Marlo Coil Co., St. Louis.
●Meyer Furnace Co., Peoria, Ill.
Micheli Air Conditioning Co., Inc., Schenectady, N. Y.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York City.
Palmer Manufacturing Corp., Phoenix, Ariz.
Pernot & Rich, Inc., Los Angeles.
●Premier Furnace Company, Dowagiac, Mich.
Refrigeration Economics Co., Inc., Canton, O.
Rempe Co., Chicago.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Skinner Heating & Ventilating Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
●Sturtevant Co., B. F., Boston.
Surface Combustion, Toledo, O.
Trane Co., LaCrosse, Wis.
U. S. Air Conditioning Corp, Minneapolis
United States Radiator Corp., Detroit.
Vilter Manufacturing Co., Milwaukee, Wis.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
XL Refrigerating Co., Inc., Chicago.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

AIR CONDITIONING UNITS, CENTRAL PLANT, WINTER, SPLIT SYSTEM TYPE

(Self-contained fan, filter, humidifier and heating coil unit for connection to steam or hot water boiler with duct distribution of air)

Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Airtemp Division, Chrysler Corp., Dayton, Ohio.
Aladdin Heating Corp., Oakland, Cal.
Allis-Chalmers Manufacturing Company, Milwaukee.
American Blower Corp., Detroit.
Betz Air Conditioning Corp., Kansas City, Mo.
Blower Application Co., Milwaukee.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
●Clarage Fan Co., Kalamazoo, Mich.
Eastern Oil & Equipment Co., Portland, Maine.
Fairbanks, Morse & Co., Chicago.
Fedders Mfg. Co., Inc., Buffalo.
●Fitzgibbons Boiler Co., Inc., New York City.
General Electric Co., Bloomfield, N. J.
Handelan Washed Air Company, Minneapolis.
Hastings Air Conditioning Co., Inc., Hastings, Nebr.
Jaden Manufacturing Co., Inc., F., Hastings, Nebr.
Johnson Co., S. T., Oakland, Cal., and Philadelphia
Kauffman Air Conditioning Corp., St. Louis.
Kramer Trenton Co., Trenton, N. J.
Kennard, Inc., Sam, St. Louis.
McQuay, Inc., Minneapolis.
Marlo Coil Company, St. Louis.
●May Oil Burner Corp., Baltimore.
●Mayflower Air Conditioners, Inc., St. Paul.
Micheli Air Conditioning Co.,Inc., Schenectady, N. Y.
Modine Mfg. Co., Racine, Wis.
New York Blower Co., Chicago.
Niagara Blower Company, New York City.
Pan-American Eng. Co., Berkeley, Cal.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Refrigeration Economics Co., Inc., Canton, O.
Richmond Radiator Co., Inc., Uniontown, Pa.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Surface Combustion, Toledo, O.
Trane Co., LaCrosse, Wis.
U. S. Air Conditioning Corp., Minneapolis.
United States Radiator Corp., Detroit.
Waterman-Waterbury Co., Minneapolis
Western Blower Company, Seattle, Wash.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williams Oil-O-Matic Heating Corporation, Bloomington, Ill.
●Wood Industries, Inc., Gar, Detroit.
York Ice Machinery Corporation, York, Pa.
York Oil Burner Company, Inc., York, Pa.
Young Radiator Company, Racine, Wis.

● Advertisement in this issue. See Index to Advertisers, page 252

AIR CONDITIONING UNITS, EVAPORATIVE TYPE, SUMMER

(For cooling with sprays, no dehumidification)

Air-O-Line Co., The, Dallas, Tex.
Air & Refrigeration Corp., New York City.
American Blower Corporation, Detroit.
American Cooling Tower Co., Kansas City, Mo.
American Metal Products, Fort Worth, Texas.
April Showers Company, Washington, D. C. (Roof Spray)
Aqua-Mist Company, Topeka, Kansas.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Ballantyne Company, Omaha, Nebr.
Bien Air Conditioning Co., Los Angeles, Cal.
Campbell Heating Co., E. K., Kansas City, Mo.
Carrier Corporation, Syracuse, N. Y.
Dallas Engineering Co., Inc., Dallas, Tex.
Economy Electric Manufacturing Co., Cicero, Ill.
Electrogas Furnace Company, San Francisco, Cal.
Essick Manufacturing Co., Los Angeles, Cal.
Fairbanks, Morse & Co., Chicago.
Great National Air Conditioning Corp., Dallas, Tex.
Hall Mfg. Co., Cedar Rapids, Ia.
Montag Stove & Furnace Works, Portland, Ore.
Mountain States Equipment Co., Denver, Colo.
National Engineering & Manufacturing Co., Kansas City, Mo.
Niagara Blower Company, New York City.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Northwest Stove Works, Portland, Ore.
Pacific Airmax Corporation, Huntington Park, Calif.
Palmer Manufacturing Corp., Phoenix, Ariz.
Pernot & Rich, Inc., Los Angeles.
Reynolds Manufacturing Co., Springfield, Mo.
Royal Air Conditioning Equipment Co., Alhambra, Cal.
Shreveport Eng. Co., Inc., Shreveport, La.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
Western Blower Company, Seattle, Wash.
X L Refrigerating Co., Inc., Chicago.

AIR CONDITIONING UNITS, ROOM TYPE, SUMMER, FLOOR CABINET, REMOTE COMPRESSOR OR COLD WATER, UNDER 3 TONS CAPACITY

(Self-contained blower, coil, filter unit for connection to remote compressor or cold water supply)

Airtemp Division, Chrysler Corp., Dayton, Ohio.
Carrier Corp., Syracuse, N. Y.
Fairbanks, Morse & Co., Chicago.
General Air Conditioning Corp., Cincinnati, Ohio.
General Electric Co., Bloomfield, N. J.
Giant Mfg. Co., Council Bluffs, Iowa.
Hall Manufacturing Co., Cedar Rapids, Iowa.
Hastings Air Conditioning Co., Inc., Hastings, Nebr.
Ilg Electric Ventilating Co., Chicago.
Jaden Mfg. Co., Inc., F., Hastings, Nebr.
Kauffman Air Conditioning Corp., St. Louis.
Kennard, Inc., Sam, St. Louis.
King Ventilating Co., Owatonna, Minn.
McLouth Air Conditioning Corporation, Lansing, Mich.
McQuay, Inc., Minneapolis.
Norwin Co., Freeport, Ill.
Perham Products, Inc., Chicago.
•Premier Furnace Company, Dowagiac, Mich.
Refrigeration Economics Co., Inc., Canton, O.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Scott-Newcomb, Inc., St. Louis.
Standard Computing Scale Co., Air Conditioning & Refrigeration Div., Detroit.
Trane Company, LaCrosse, Wis.
Unified Air Conditioner Co., Duluth, Minn.
U. S. Air Conditioning Corp., Minneapolis
X L Refrigerating Company, Inc., Chicago.
York Ice Machinery Corp., York, Pa.
Young Radiator Company, Racine, Wis.

AIR CONDITIONING UNITS, ROOM TYPE, SUMMER, FLOOR CABINET, SELF-CONTAINED COMPRESSOR, UNDER 3 H. P.

(Self-contained blower, coils, compressor and filter unit)

Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Airtemp Div., Chrysler Corp., Dayton, O.
Carrier Corp., Syracuse, N. Y.
Fairbanks, Morse & Co., Chicago.
Frigidaire Division, General Motors Sales Corporation, Dayton, O.
Gale Products, Galesburg, Ill.
General Electric Co., Bloomfield, N. J.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Harvey-Whipple, Inc., Springfield, Mass.
Ice Cooling Appliance Corp., Morrison, Ill. (Ice)
Ilg Electric Ventilating Co., Chicago.
Indian Trailer Corporation, Koolroom Div., Chicago.
Kauffman Air Conditioning Corp., St. Louis.
•Meyer Furnace Co., Peoria, Ill.
Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit.
Philco Radio & Television Corp., Philadelphia.
Pleasantaire Corp., Washington, D. C.
•Premier Furnace Company, Dowagiac, Mich.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Scott-Newcomb, Inc., St. Louis.
Trane Co., LaCrosse, Wis.
York Ice Machinery Corp., York, Pa.

AIR CONDITIONING UNITS, ROOM TYPE, WINTER, FLOOR CABINET

(Self-contained blower, filter, heating coil, humidifier unit)

Air & Refrigeration Corp., New York City.
Burnham Boiler Corp., Irvington, N. Y.
Campbell Heating Company, Des Moines, Ia.
Carrier Corp., Syracuse, N. Y.
Drayer & Hanson, Inc., Los Angeles.
Fairbanks, Morse & Co., Chicago, Ill.
General Electric Co., Bloomfield, N. J.
Ilg Electric Ventilating Co., Chicago, Ill.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Kennard, Inc., Sam, St. Louis.
McQuay, Inc., Minneapolis, Minn.
Northwest Stove & Furnace Works, Inc., Portland, Ore.
Pan-American Engineering Co., Berkeley, Cal.
Perham Products, Inc., Chicago.
Refrigeration Economics Co., Inc., Canton, Ohio.
Reznor Mfg. Co., Mercer, Pa.
Richmond Radiator Company, Inc., Uniontown, Pa.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Somers, Inc., H. J., Detroit, Mich.
Standard Computing Scale Co., Air Conditioning and Refrigeration Div. Detroit.
Surface Combustion, Toledo, O.
Trane Co., LaCrosse, Wis.
Unified Air Conditioner Co., Duluth, Minn.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

AIR CONDITIONING UNITS, ROOM TYPE, YEAR AROUND, FLOOR CABINET

(Self-Contained blower, cooling and heating coil, filter, humidifier unit for connection to remote compressor or cold water supply and steam or hot water)

Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Air & Refrigeration Corp., New York City.
Airtemp Division, Chrysler Corp., Dayton, Ohio.
Betz Air Conditioning Corp., Kansas City, Mo.
Carrier Corp., Syracuse, N. Y.
•Clarage Fan Co., Kalamazoo, Mich.
Curtis Refrigerating Machine Co., St. Louis.
Fairbanks Morse & Co., Chicago, Ill.
General Electric Co., Bloomfield, N. J.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Grinnell Co., Inc., Providence, R. I.
Hastings Air Conditioning Company, Inc., Hastings, Nebr.
Ilg Electric Ventilating Co., Chicago, Ill.
Jaden Manufacturing Co., Inc., F., Hastings, Nebr.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Kennard, Inc., Sam. St. Louis.
Kramer Trenton Co., Trenton, N. J.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Perham Products, Inc., Chicago.
Pfening Company, Fred D., Columbus, Ohio. (Industrial)
Refrigeration Economics Co., Inc., Canton, Ohio.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Standard Computing Scale Co., Air Conditioning and Refrigeration Div., Detroit.
Trane Co., La Crosse, Wis.
Unified Air Conditioner Co., Duluth, Minn.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

AIR CONDITIONING UNITS, STORE TYPE, SUMMER, FLOOR CABINET, SELF-CONTAINED COMPRESSOR, 3 H. P. AND OVER

(Self-contained blower, coil, compressor, filter unit, with air discharge approximately 6 ft. above floor)

Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Airtemp Division, Chrysler Corp., Dayton, O.
Buffalo Forge Co., Buffalo, N. Y.

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Carrier Corp., Syracuse, N. Y.
Curtis Refrigerating Machine Co., St. Louis.
Fairbanks, Morse & Co., Chicago.
Forman Air Conditioning & Eng. Co., New York City. (freon)
Frick Co., Waynesboro, Pa.
Frigidaire Division, General Motors Corporation, Dayton, O.
General Electric Co., Air Conditioning Dept., Bloomfield, N. J.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Kauffman Air Conditioning Corp., St. Louis.
Kramer Trenton Co., Trenton, N. J.
Nevinger Manufacturing Co., Inc., Greenville, Ill.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Scott-Newcomb, Inc., St. Louis, Mo.
Trane Co., LaCrosse, Wis.
Vilter Mfg. Company, Milwaukee.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williams Oil-O-Matic Heating Corporation, Bloomington, Ill.
X-L Refrigerating Company, Inc., Chicago.
York Ice Machinery Corp., York, Pa.

AIR DIFFUSERS

See Diffusers, Air

AIR FILTERS

See Filters, Air

AIR METERS

See Meters, Air Velocity, Direct Reading

AIR WASHERS

See Washers, Air

ANALYZERS, CO_2, PORTABLE

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barclay, Inc., Robert, Chicago.
Defender Automatic Regulator Co., St. Louis.
Dwyer Mfg. Co., F. W., Chicago.
Ellison Draft Gage Co., Chicago, Ill.
Engelhard, Inc., Chas., Newark, N. J.
Friez & Sons, Julien P., Towson, Md.
Hays Corp., Michigan City, Ind.
Hotstream Heater Co., Cleveland.
Huyette Co., Inc., Paul B., Philadelphia.
Permutit Co., New York City.
Precision Control Co., San Francisco.
Precision Thermometer & Instrument Co., Philadelphia.
Preferred Utilities Mfg. Corp., New York City.
Service to Industry, West Hartford, Conn.
Weaver Mfg. Co., Springfield, Ill.

ANEMOMETERS

American Instrument Co., Silver Spring, Md.
Barclay, Inc., Robert, Chicago.
Detroit Air Conditioning Service Co., Inc., Detroit.
Friez & Sons, Julien P., Towson, Md.
Hill, E. Vernon, Chicago, Ill.
●Illinois Testing Laboratories, Inc., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Wilson Products, Inc., Reading, Pa. (Thermometer)

ANGLES, BARS, BEAMS, CHANNELS AND TEES (LIGHT WEIGHT SHAPES)

Aluminum Company of America, Pittsburgh, Pa.
●American Brass Co., Waterbury, Conn.
Atlantic Steel Company, Atlanta,, Ga.
●Bethlehem Steel Co., Bethlehem, Pa.
Brasco Manufacturing Co., Harvey, Ill.
Byers Co., A. M., Pittsburgh, Pa. (Wrought iron structural shapes).
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Colonial Alloys Co., Philadelphia.
Columbia Steel Co., San Francisco, Cal.
Decatur Iron & Steel Company, Decatur, Ala.
Inland Steel Co., Chicago, Ill.
International Steel Co., Evansville, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Laclede Steel Co., St. Louis, Mo.
Lukens Steel Co., Coatesville, Pa.
Milcor Steel Co., Milwaukee, Wis.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass Incorporated, New York City.
●Ryerson & Son, Inc., Joseph T., Chicago.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Truscon Steel Co., Youngstown, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

ARC WELDERS

See Welders, Arc

ARC WELDING ELECTRODES

See Electrodes, Arc Welding

ASBESTOS BOARD

See Board, Duct, Asbestos

ASBESTOS PAPER

See Paper, Asbestos

ATTIC FANS

See Fans, Night Air Cooling

ATTIC FURNACES

See Furnaces, Warm Air, Air Conditioning for Attic Installation

AUTOMATIC HUMIDIFIERS

See Humidifiers, Furnace, Evaporation, Spray

BAFFLES, OIL BURNER & STOKER

Air Devices, Inc., New York City.
Barclay Inc., Robert, Chicago.
Harvey, Inc., Sid, Valley Stream, N. Y.
Jones Products Company, Ferndale, Mich.
McLeod & Henry Co., Inc., Troy, N. Y.
Monogram Combustion Chamber Co., Philadelphia.
Munn and Steele, Inc., Newark, N. J. (Stoker)
Quigley Company, Inc., New York City.

BALANCING EQUIPMENT FOR FANS

Bear Mfg. Co., Rock Island, Ill.

BALL BEARINGS

See Bearings, Ball

BAND SAWS

See Saws, Band, Sheet Metal Cutting

BAR FOLDERS

See Machines, Bar Folders

BARS

See Angles, Bars, Beams, Channels and Tees (Light Weight Shapes)

BASES AND PADS, VIBRATION ISOLATING

Armstrong Cork Co., Lancaster, Pa. (Cork)
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, B. T., Jr., New Canaan, Conn.
Cork Import Corp., New York City (Cork)
Cork Insulation Co., Inc., New York City.
Ehret Magnesia Manufacturing Co., Valley Forge, Pa.
Felters Co., Inc., Boston.
Firestone Tire & Rubber Co., Akron, O.
Gates Rubber Company Sales Div., Inc., Denver, Colo.
Johns-Manville, New York City.
Keldur Corporation, New York City.
Korfund Co., Inc., Long Island City, N. Y.
Lord Mfg. Co., Erie, Pa.
Manley Products Corp., York, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
National Lead Co., New York City.
Packless Metal Products Corporation, New Rochelle, N. Y.
United Cork Companies, Kearny, N. J.
United States Rubber Co., New York City.
Vibration Eliminator Co., Astoria, N. Y. (Cork and rubber)
Western Felt Works, Chicago (Felt)

BATHS, TINNING

American Gas Furnace Co., Elizabeth, N. J.
Eclipse Fuel Engineering Co., Rockford, Ill.
Retinning Manufacturing Co., Chicago.

BEADERS

See Machines, Beading

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BEAMS

See Angles, Bars, Beams, Channels and Tees (Light weight Shapes)

BEARINGS, BALL

Ahlberg Bearing Co., Chicago.
Bantam Bearings Corp., South Bend, Ind.
Bearing Co. of America, Lancaster, Pa.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., New Britain, Conn.
Link-Belt Co., Chicago.
Marlin-Rockwell, Jamestown, N. Y.
New Departure, Div. General Motors Sales Corp., Bristol, Conn.
Nice Ball Bearing Co., Philadelphia.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Shafer Bearing Corp., Chicago.
SKF Industries, Inc., Philadelphia.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Torrington Co., Torrington, Conn.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, PILLOW BLOCK

Ahlberg Bearing Co., Chicago.
Air Controls, Inc., Cleveland.
Caldwell Co., W. E., Louisville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Co., Chicago.
Clizbe Bros. Mfg. Co., Plymouth, Ind.
Dick Co., Inc., R. & J., Passaic, N. J.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., New Britain, Conn.
Freed Products Co., Moline, Ill.
General Motors Corp., Moraine Products Div., Dayton, Ohio.
Goldens' Fdry. & Machine Co., Columbus, Ga.
Hastings Air Conditioning Company, Inc., Hastings, Nebr.
Jones Foundry & Machine Co., W. A., Chicago.
Lau Blower Co., Dayton, Ohio.
Link-Belt Co., Chicago.
Maple City Stamping Co., Peoria, Ill.
Medart Co., St. Louis.
Norma-Hoffmann Bearing Corp., Stamford, Conn.
●Randall Graphite Products Corp., Chicago.
Royersford Foundry & Machine Co., Royersford, Pa.
Shafer Bearing Corp., Chicago.
SKF Industries, Inc., Philadelphia.
Smith, Inc., Winfield H., Springville, N. Y.
Sprout-Waldron & Co., Muncy, Pa.
Standard Pressed Steel Co., Jenkintown, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
●Triangle Manufacturing Co., Oshkosh, Wis.
Viking Air Conditioning Corp., Cleveland.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, ROLLER

Ahlberg Bearing Company, Chicago.
Bantam Bearings Corp., South Bend, Ind.
Dodge Mfg. Corp., Mishawaka, Ind.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Jones Foundry & Machine Co., W. A., Chicago.
Link-Belt Co., Chicago.
Medart Co., St. Louis.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Roller Bearing Co. of America, Trenton, N. J.
Royersford Foundry & Machine Co., Royersford, Pa.
Shafer Bearing Corp., Chicago.
SKF Industries, Inc., Philadelphia.
Timken Roller Bearing Co., Canton, Ohio.
Torrington Co., Torrington, Conn.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, SLEEVE

Dodge Mfg. Corp., Mishawaka, Ind.
Federal-Mogul Corp., Detroit, Mich.
General Motors Corp. Moraine Products Div., Dayton, Ohio.
Johnson Bronze Co., New Castle, Pa.
Keystone-Carbon Co., Inc., St. Marys, Pa.
Medart Co., St. Louis.
Motex Metal Process Corporation, Detroit.
●Randall Graphite Products Co., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wood's Sons Co., T. B., Chambersburg, Pa.

BELTS, V

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Pulley Co., Philadelphia.
Browning Mfg. Co., Inc., Maysville, Ky.
Chicago Belting Co., Chicago.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
Dick Co., Inc., R. & J., Passaic, N. J.
Dodge Manufacturing Corp., Mishawaka, Ind.
Firestone Tire & Rubber Co., Akron, Ohio.
Gates Rubber Co., Denver, Colo.
Gilmer Co., L. H., Philadelphia, Pa.
Goodrich Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Graton & Knight, 356 Franklin St., Worcester, Mass. (Leather)
Jones Foundry & Machine Co., W. A., Chicago.
Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.
Manheim Manufacturing and Belting Company, Manheim, Pa. (Adjustable)
Medart Co., St. Louis.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Rockwood Manufacturing Co., Indianapolis, Ind.
Schieron Co., Chas. A., New York City.
Thermoid Rubber Div. of Thermoid Co., Trenton, N. J.
United States Rubber Co., New York City.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Pump & Machinery Corp., Harrison, N. J.

BENDERS, ANGLE, ETC.

Champion Blower & Forge Co., Lancaster, Pa.
Excelsior Tool and Machine Co., East St. Louis, Ill.
●Evans Machine Co., L. R., Sandwich, Ill.
Hendley & Whittemore Co., Beloit, Wis.
●Hossfield Mfg. Co., Winona, Minn.
O'Neil Irwin Mfg. Co., Minneapolis.
●Whitney Metal Tool Company, Rockford, Ill.

BI-METALS, THERMOSTATIC

Chace Co., W. M., Detroit, Mich.
General Plate Div. Metals & Controls Corp., Attleboro, Mass.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wilson Co., The, H. A., Newark, N. J.

BLADES, PROPELLER FAN

Ackermann Manufacturing Company, Wheeling, W. Va.
Aerovent Fan Co., Piqua, Ohio.
Air Controls, Inc., Cleveland.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
●Allen Corp., Detroit.
Belanger Fan & Blower Co., Detroit.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Circulators & Devices Mfg. Corp., New York City.
Dallas Engineering Co., Inc., Dallas, Texas.
DeBothezat Vent. Eq. Div., American Machine & Metals, Inc., East Moline, Ill.
Dual-Air Fan Corporation, Chicago.
Economy Electric Manufacturing Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
General Aire Company, Philadelphia.
International Engineering, Inc., Dayton, Ohio.
Lohman, Inc. William J., Irvington, N. J.
Meier Electric & Machine Co., Indianapolis, Ind.
Myers Electric Co., Pittsburgh, Pa.
National Engineering & Manufacturing Co., Kansas City, Mo.
Norwin Co., Freeport, Ill.
Peerless Electric Co., Warren, O.
Roto-Beam Div., Peerless of America, Chicago.
●Schwitzer-Cummins Company, Indianapolis, Ind.
South Bend Air Products, Inc., South Bend, Ind.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Swift Mfg. Co., Detroit, Mich.
Torrington Mfg. Co., Torrington, Conn.
Utility Fan Corporation, Los Angeles
Victor Electric Products, Inc., Cincinnati, O.

BLAST GATES

●Airtherm Mfg. Co., St. Louis, Mo.
Allington & Curtis Mfg. Co., Saginaw, Mich.
●Berger Bros. Co., Philadelphia, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
●Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis.
Eclipse Fuel Engineering Co., Rockford, Ill.
Goethel Co., Alfred C., Milwaukee, Wis.
Goethel Sheet Metal Works, Alfred, Milwaukee, Wis.
Grand Rapids Blow Pipe and Dust Arrester Co., Grand Rapids, Mich.
Kirk & Blum Mfg. Co., Cincinnati, O.
Maysteel Products, Inc., Mayville, Wis.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
R-S Products Corp., Philadelphia, Pa.
Spencer Turbine Co., Hartford, Conn.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Western Blower Co., Seattle, Wash.

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BLINDS, VENETIAN

Athey Co., Chicago.
Bostwick-Goodell Co., Norwalk, Ohio.
Chicago Venetian Blind Co., Chicago.
Columbia Mills, Inc., Saginaw, Mich.
Higgin Products, Inc., Newport, Ky.
Hough Shade Corporation, Janesville, Wis.
Kane Mfg. Corporation, Kane, Pa.
Miller-Connell Mfg. Co., Inc., Chicago.
Mitchell Moulding Co., Forest Park, Ill.
Patterson Shade Co., Indianapolis, Ind.
Russell Company, F. C., Cleveland.
Snead, Herbert S., New York City.
Standard Products Co., Detroit.
Warren Shade Co., Inc., Minneapolis, Minn.
Yardley Venetian Blind Co., Columbus, Ohio.

BLOWER—FILTER UNITS

(Separate Conversion Units for Warm Air Furnaces)

Agricola Furnace Co., Inc., Gadsden, Ala.
Air Conditioning Equipment Co., Minneapolis, Minn.
Air Controls, Inc., Cleveland, O.
Airwasher Corporation, Lansing, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
American Furnace & Foundry Co., Milan, Mich.
American Machine Products Company, Marshalltown, Ia.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Armstrong Furnace Company, Columbus, Ohio.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Auburn Burner Company, Auburn, Ind.
Bard Mfg. Co., Bryan, O.
Barrett Engineers, Cleveland Heights, O.
Bishop & Babcock Mfg. Co., Cleveland, O.
Bovee Furnace Works, Waterloo, Iowa.
●Brundage Co., Kalamazoo, Mich.
Bryant Corp., C. L., Cleveland.
Campbell Heating Co., Des Moines, Ia.
Char-Gale Mfg. Co., Minneapolis.
●Conco Corporation, Mendota, Ill.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Economy Electric Mfg. Co., Cicero, Ill.
●Forest City Foundries Co., Cleveland.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Furbio Co., Hermansville, Mich.
Gehri Co., Tacoma, Wash.
General Blower Corp., San Francisco.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Green Colonial Furnace Company, Des Moines, Iowa.
Hall Manufacturing Co., Cedar Rapids, Iowa.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Harvey-Whipple, Inc., Springfield, Mass.
Hastings Air Conditioning Company, Inc., Hastings, Nebr.
●Henry Furnace & Foundry Co., Cleveland, O.
Hess Warming & Ventilating Co., Chicago, Ill.
Homer Furnace & Foundry Corp, Coldwater, Mich.
Jaden Mfg. Co., Inc., F., Hastings, Nebr.
Kelsey Heating Co., Syracuse, N. Y.
Lau Blower Co., Dayton, O.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
Majestic Co., Huntington, Ind.
Maple City Stamping Co., Peoria, Ill.
Marshall Furnace Co., Marshall, Mich.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co., Div. Des Moines Stove Repair Co., Des-Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Engineering Co., Detroit.
New-Aire Blower Co., Dearborn, Mich.
Northwest Stove & Furnace Works, Inc., Portland. Ore.
●Olsen Mfg. Co., C. A., Elyria, O.
Pacific Airmax Corporation, Huntington Park, Calif.
Patten Company, J. V., Sycamore, Ill.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Peerless Electric Co., Warren, O.
●Peerless Foundry Co., Indianapolis, Ind.
Pennsylvania Furnace & Iron Co., Warren, Pa.
●Premier Furnace Co., Dowagiac, Mich.
Roberts-Hamilton Co., Minneapolis, Minn.
Round Oak Co., Dowagiac, Mich.
Royal Air Conditioning Equip. Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Company, Ashland, Ohio.
St. Louis Furnace Mfg. Co., St. Louis.
Sandberg Co., H. J., Portland, Ore.
●Schwab Furnace Co., Milwaukee, Wis.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Sioux City Foundry and Boiler Co., Sioux City, Ia.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
●Syncromatic Air Conditioning Corporation, Milwaukee.
U. S. Air Conditioning Corp., Minneapolis
Utility Fan Corporation, Los Angeles.
Viking Air Conditioning Corp., Cleveland, O.
Waterman-Waterbury Co., Minneapolis, Minn.
Wayne Automatic Relay Co., Fort Wayne, Ind.
Western Blower Co., Seattle, Wash.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.

BLOWER HOUSINGS

See Housings, Blower

BLOWER—WASHER UNITS, FOR CLEANING OR HUMIDIFYING

(Separate Conversion Units for Warm Air Furnaces)

Air Stream Filter Corp., St. Louis.
Airwasher Corporation, Lansing, Mich.
American Blower Corporation, Detroit.
American Machine Products Co., Marshalltown, Ia.
Arcweld Mfg. Co., Inc., Seattle, Wash.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Bishop & Babcock Mfg. Co., Cleveland, O.
●Brauer Supply Co., A. G., St. Louis.
●Brundage Co., Kalamazoo, Mich.
Hess Warming & Ventilating Co., Chicago.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Engineering & Manufacturing Co., Kansas City, Mo.
New York Blower Co., Chicago.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Spray Wheel Air Conditioners, Inc., Denver, Colo.

BLOWER WHEELS

See Wheels, Blower

BLOWERS, FORCED DRAFT, FOR ASH PIT

American Blower Corp., Detroit.
Barrett Engineers, Cleveland Heights, O.
Buffalo Forge Co., Buffalo, N. Y.
Burnwell Corp., Allentown, Pa.
Champion Blower & Forge Co., Lancaster, Pa.
Economy Electric Mfg. Co., Cicero, Ill.
Fuel Savers, Inc., Harrisburg, Pa.
Garden City Fan Co., Chicago.
●General Blower Co., Chicago.
General Blower Co., Inc., Philadelphia.
●Henry Furnace & Fdy. Co., Cleveland.
International Engineering, Inc., Dayton, O.
Mohler Co., J. K., Ephrata, Pa.
New York Blower Co., Chicago.
Smith Manufacturing Co., Inc., F. A., Rochester, N. Y.
South Bend Air Products, Inc., South Bend, Ind.
●Sturtevant Co., B. F., Hyde Park, Boston.
Universal Blower Co., Birmingham, Mich.
Wing Mfg. Co., L. J., New York City.

BLOWERS, FORCED DRAFT, FOR SMOKE PIPE

Barrett Engineers, Cleveland Heights, O.
Garden City Fan Co., Chicago.
●General Blower Co., Chicago.
Muncie Gear Works, Muncie, Ind.
New York Blower Co., Chicago.

BLOWERS, FURNACE CENTRIFUGAL

Agricola Furnace Co., Inc., Gadsden, Ala.
Air Conditioning Equipment Co., Minneapolis, Minn.
Air Controls, Inc., Cleveland, O.
Aladdin Heating Corporation, Oakland, Cal.
American Blower Corp., Detroit, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
American Machine Products Company, Marshalltown, Ia.
Ames Co., W. R., San Francisco, Cal.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Auburn Burner Company, Auburn, Ind.
Barrett Engineers, Cleveland Heights, O.
Bishop & Babcock Mfg. Co., Cleveland, O.
●Brundage Co., Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Heating Co., Des Moines, Ia.
Chandler Co., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago, Ill.
●Clarage Fan Co., Kalamazoo, Mich.
Economy Electric Mfg. Co., Cicero, Ill.
Electrogas Furnace Co., San Francisco, Cal.
Essick Manufacturing Co., Los Angeles.
Freed Products Co., Moline, Ill.
Furbio Co., Hermansville, Mich.
Gehri Co., Tacoma, Wash.
●General Blower Co., Chicago.
General Blower Co., Inc., Philadelphia, Pa.
General Blower Corp., San Francisco.
Grand Rapids Die & Tool Co., Grand Rapids, Mich.

● Advertisement in this issue. See Index to Advertisers, page 252

Hall Manufacturing Co., Cedar Rapids, Iowa.
Hastings Air Conditioning Co., Inc., Hastings, Nebr.
●Henry Furnace & Foundry Co., Cleveland.
Hess Warming & Ventilating Co., Chicago, Ill.
Jaden Mfg. Co., Inc., F., Hastings, Nebr.
Lau Blower Co., Dayton, O.
Lennox Furnace Co., Marshalltown, Iowa.
Majestic Co., Huntington, Ind.
Maple City Stamping Co., Peoria, Ill.
Mauer Engineering, Evanston, Ill.
●Meyer Furnace Co., Peoria, Ill.
Montag Stove & Furnace Works, Portland, Ore.
●Morrison Products, Inc., Cleveland.
Mountain States Equipment Company, Denver, Colo.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Engineering Co., Detroit.
New-Aire Blower Co., Dearborn, Mich.
New York Blower Co., Chicago.
Northern Furnace & Supply Company, Billings, Mont.
Pacific Airmax Corporation, Huntington Park, Calif.
Palmer Manufacturing Corp., Phoenix, Ariz.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Peerless Electric Co., Warren, O.
●Premier Furnace Co., Dowagiac, Mich.
Reynolds Mfg. Co., Grand Rapids, Mich.
Royal Air Conditioning Equip. Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
Ryniker Sheet Metal Works, Inc., Billings, Mont.
Security Manufacturing Co., Kansas City, Mo.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Skuttle Manufacturing Co., Detroit.
Southern Fan & Blower Co., Dallas, Tex.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
●Sturtevant Co., B. F., Hyde Park, Boston.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
Viking Air Conditioning Corp., Cleveland, O.
Waterman-Waterbury Co., Minneapolis, Minn.
Western Blower Co. Seattle, Wash.

BLOWERS, VENTILATING SYSTEM

(Capacity 4,000 c.f.m. up)

Advance Fan & Blower Co., Detroit, Mich.
Air Controls, Inc., Cleveland, O.
Air-O-Line Co., Dallas, Tex.
Aladdin Heating Corporation, Oakland, Cal.
Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blower Corp., Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
American Foundry & Furnace Co., Bloomington, Ill.
American Machine Products Company, Marshalltown, Ia.
Ames Co., W. R., San Francisco, Cal.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Ballantyne Co., Omaha, Nebr
●Bayley Blower Co., Milwaukee, Wis.
Bishop & Babcock Mfg. Co., Cleveland, O.
●Brundage Co., Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Heating Co., E. K., Kansas City, Mo.
Champion Blower & Forge Co., Lancaster, Pa.
●Clarage Fan Co., Kalamazoo, Mich.
Columbus Heating and Vent. Co., Columbus, O.
Coppus Engineering Corp., Worcester, Mass.
De Bothezat Ventilating Equipment Division, American Machine & Metals, Inc., East Moline, Ill.
Economy Electric Manufacturing Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago.
Furblo Co., Hermansville, Mich.
Garden City Fan Co., Chicago, Ill.
●General Blower Co., Chicago.
General Blower Co., Inc., Philadelphia, Pa.
Grand Rapids Die & Tool Co., Grand Rapids, Mich.
Hastings Air Conditioning Company, Inc., Hastings, Nebr.
Ilg Electric Ventilating Co., Chicago, Ill.
Jaden Mfg. Co., Inc., F., Hastings, Nebr.
Johnson Fan & Blower Corp., Chicago, Ill.
King Ventilating Co., Owatonna, Minn.
Lau Blower Co., Dayton, O.
Lehigh Fan & Blower Co., Allentown, Pa.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
Montag Stove & Furnace Works, Portland, Ore.
Mountain States Equipment Co., Denver, Colo.
National Engineering & Manufacturing Co., Kansas City, Mo.
National Manufacturing & Engineering Co., Detroit.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York City.
Northern Blower Co., Cleveland, Ohio.
Palmer Manufacturing Corp., Phoenix, Ariz.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Peerless Electric Co., Warren, O.
Phelps Mfg. Co., Little Rock, Ark.
Reynolds Manufacturing Co., Grand Rapids, Mich.
Royal Air Conditioning Equip. Co., Alhambra, Cal.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., St. Louis.
Southern Fan & Blower Co., Dallas, Tex.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Supreme Heater & Ventilating Corp., St. Louis, Mo.
Torit Manufacturing Co., St. Paul, Minn.
Trane Company, LaCrosse, Wis.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
Viking Air Conditioning Corp., Cleveland.
Western Blower Co., Seattle, Wash.
Wing Mfg. Co., L. J., New York City.

BLOW PIPE EQUIPMENT

See Blast Gates; Collectors, Blow Pipe; Fittings. Blow Pipe

BOARD, SUBSTITUTE MATERIAL, FOR DUCTS

Johns-Manville, New York City.
Keasbey & Mattison Company, Ambler, Pa.
Keystone Asphalt Products Co., Chicago.
Masonite Corporation, Chicago.
Ruberoid Co., New York City.
●Sall Mountain Co., Chicago.
United States Gypsum Company, Chicago.
●Wilson, Inc., Grant, Chicago.

BOLTS, EXPANSION

Chicago Expansion Bolt Co., Chicago.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fee & Mason Mfg. Co., Inc., New York City.
National Lead Co., New York City.
Ohio Brass Co., Mansfield, Ohio.
Paine Company, The, Chicago.
Rawlplug Company, Inc., New York City.
Rolyan Corp., Chicago.
●Ryerson & Son, Inc., Joseph T., Chicago.
Star Expansion Bolt Co., New York City.
U. S. Expansion Bolt Co., Inc., York, Pa.

BOLTS, TOGGLE AND ANCHOR

Carty & Moore Engineering Co., Detroit. (Anchor)
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Expansion Bolt Co., Chicago.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fee & Mason Mfg. Co., Inc., New York City.
Grabler Mfg. Co., Cleveland.
Lamson & Sessions Co., Cleveland.
Paine Company, The, Chicago.
Rawlplug Company, Inc., New York City.
Republic Steel Corp., Cleveland.
Rolyan Corp., Chicago.
●Ryerson & Son., Inc., Joseph T., Chicago.
Star Expansion Bolt Co., New York City.
U. S. Expansion Bolt Co., Inc., York, Pa.

BOOSTER FANS

See Fans, Booster

BOOTS, FURNACE PIPE

See Fittings and Accessories, Furnace Pipe

BRAKES, METAL WORKERS', HAND

Bertsch & Co., Cambridge City, Ind.
Clearing Machine Corp., Chicago.
●Dreis & Krump Mfg. Co., Chicago, Ill.
Elker Mfg. Co., Ogallala, Nebr.
Excelsior Tool and Machine Co., East St. Louis, Ill.
New Albany Machine Mfg. Co., New Albany, Ind.
●Niagara Machine & Tool Works, Buffalo, N. Y.
O'Neill Irwin Mfg. Co., Minneapolis.
●Peck, Stow & Wilcox Co., Southington, Conn.
Weiss & Co., H., New York City.
●Whitney Metal Tool Co., Rockford, Ill.

BRAKES, METAL WORKERS', PORTABLE

●Dreis & Krump Mfg. Co., Chicago.
Elker Mfg. Co., Ogallala, Nebr.
Harris, A. R., Hammond, Ind.
O'Neil Irwin Mfg. Co., Minneapolis.
●Whitney Metal Tool Co., Rockford, Ill.

BRAKES, METAL WORKERS', POWER

Bertsch & Co., Cambridge City, Ind.
Clearing Machine Works, Chicago.
Cincinnati Shaper Co., Cincinnati, O.
●Dreis & Krump Mfg. Co., Chicago, Ill.
Heartley Machine & Tool Co., Toledo, O.

Ohl & Co., Geo. A., Newark, N. J.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rafter Machine Co., Belleville, N. J.
Swaine Mfg. Co., Fred J., St. Louis.
●Verson Allsteel Press Co., Chicago.
Weiss & Co., H., New York City.
●Whitney Metal Tool Co., Rockford, Ill.

BRUSHES, ACID

Cleveland Brush Factory, Inc., Cleveland, O.
Lukens Metal Co., Thos. F., Philadelphia, Pa.
●Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Brush Mfg. Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.
Potomac Mfg. Co., Philadelphia, Pa.
●Schaefer Brush Mfg. Co., Milwaukee, Wis. (Rustproof)
Weiss & Co., H., New York City.

BRUSHES, FURNACE

●Adams Company, The, Dubuque, Iowa.
Baker Furnace & Cleaner Mfg. Co., Toledo, O. (for cleaning Chimneys)
Farrell-Cheek Steel Company, Stoker Parts Div., Sandusky, Ohio.
Mill-Rose Co., Cleveland, O.
Milwaukee Brush Mfg. Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.
Pilley Brush Co., Fort Madison, Iowa.
●Schaefer Brush Mfg. Co., Milwaukee, Wis.
Worcester Brush & Scraper Co., Worcester, Mass.

BUFFERS, GRINDERS, POLISHERS AND SANDERS, ELECTRIC

Baldor Electric Co., St. Louis.
●Black & Decker Mfg. Co., Towson, Md.
Brown-Brockmeyer Co., Inc., Dayton, Ohio.
Buckeye Portable Tool Co., Dayton, O.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Pneumatic Tool Co., New York City.
Cincinnati Electrical Tool Co., Cincinnati, O. (with dust collector).
Clark Jr. Electric Co., Jas., Louisville, Ky.
Continental Machines Incorporated, Minneapolis.
Detroit Surfacing Machine Co., Detroit.
Diehl Mfg. Co., Elizabethport, N. J.
Hammond Machinery Builders, Kalamazoo, Mich.
Haskins Co., R. G., Chicago.
Hobart Brothers Company, Troy, O.
Independent Pneumatic Tool Co., Chicago, Ill.
Jefferson Machine Tool Co., Cincinnati, Ohio.
Keller, Inc., Wm. H., Grand Haven, Mich. (Pneumatic)
Lee Co., K. O., Aberdeen, S. D.
Mall Tool Co., Chicago, Ill.
Millers Falls Co., Greenfield, Mass.
Misener Mfg. Co., Inc., Syracuse, N. Y.
Reynolds Electric Company, Chicago.
●Skilsaw, Inc., Chicago, Ill.
Snap-On Tools Corp., Kenosha, Wis.
Speedway Mfg. Co., Cicero, Ill.
●Stanley Electric Tool Div., The Stanley Works, New Britain, Conn.
Stow Mfg. Co., Binghamton, N. Y.
Syntron Co., Homer City, Pa.
United States Electrical Tool Co., Cincinnati, O.
U. S. Electrical Motors, Inc., Los Angeles.
Van Dorn Electric Tool Co., Towson, Md.
●Wodack Electric Tool Corp., Chicago, Ill.

BURNERS, GAS, CONVERSION, RESIDENTIAL

Auburn Burner Co., Auburn, Ind.
Autogas Company, Chicago.
●Barber Gas Burner Co., Cleveland O.
Bard Manufacturing Company, Bryan, Ohio.
Beck Engineering Combustion Kompany, St. Louis, Mo.
Bryan Steam Corp., Peru, Ind.
Bryant Corp., C. L., Cleveland, O.
Bryant Heater Co., Cleveland, O.
Burdett Mfg. Co., Chicago, Ill.
Columbia Burner Co., Toledo, O.
Continental Stove Corp., Ironton, O.
Dalzen Manufacturing Co., Detroit.
Eclipse Fuel Engineering Co., Rockford, Ill.
Franklin Gas Heating Co., Cincinnati, Ohio.
Grand Rapids Blow Pipe and Dust Arrester Co., Grand Rapids, Mich.
Handley-Brown Heater Co., Jackson, Mich.
Jackson Sheet Metal Works, Ogden, Utah.
●Johnson Gas Appliance Co., Cedar Rapids, Iowa.
Kais Sunrise Works, Detroit.
Leahy Mfg. Co., Los Angeles, Cal.
Martin, J. O. & C. U., San Francisco.
Moncrief Furnace & Mfg. Co., Inc., Dallas, Tex.
National Machine Works, Chicago, Ill.
Ray Oil Burner Company, San Francisco.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Rotary Mfg. Co., Los Angeles, Cal.
Security Manufacturing Co., Kansas City, Mo.
Sonner Burner Co., Winfield, Kans.
Standard Heating & Radiator Co., Pittsburgh, Pa.
Surface Combustion, Toledo, O.
Webster Engineering Co., Tulsa, Okla.
●Zinc Co., John, Tulsa, Okla.

BURNERS, OIL, CONVERSION, RESIDENTIAL

Acme Oil Burner Company, Inc., Cedar Rapids, Ia. (Gun)
Airtemp Division, Chrysler Corp., Dayton, Ohio.
Aldrich Co., Wyoming, Ill.
American Radiator & Standard Sanitary Corp., Pittsburgh. (Gun)
Anchor Post Fence Co., Heating Div., Baltimore. (Gun & Rotary)
Arcweld Mfg. Co., Inc., Seattle, Wash.
Auburn Burner Co., Auburn, Ind. (Gun and rotary)
Auto-Heat Corp., New York City. (Gun)
Automatic Burner Corp., Chicago, Ill. (Gun and rotary)
Badger Mfg. Co., Madison, Wis. (Gun)
Bard Manufacturing Company, Bryan, Ohio.
Beckett Engineering Co., R. W., Elyria, Ohio. (Gun)
Bethlehem Foundry & Machine Co., Bethlehem, Pa. (Gun)
Bovee Furnace Works, Waterloo, Ia. (Gun)
Brigham Oil Burner Co, St. Louis, Mo. (Gravity)
Bryan Steam Corp., Peru, Ind. (Rotary and gun)
Caloroil Burner Corp., Hartford, Conn. (Atmospheric, gun, horizontal rotary, vacuum pressure, wall flame)
Campbell Machine Co., Minneapolis.
Cary Mfg. Co., Waupaca, Wis. (Gravity)
Century Engineering Corp., Cedar Rapids, Ia. (Gun)
Chalmers Oil Burner Co., Minneapolis, Minn. (Gun and rotary)
Chandler Company, Cedar Rapids, Iowa. (Gun and gravity)
Chicago Steel Furnace Co., Chicago, Ill.
Columbus Metal Products, Inc., Columbus, Ohio. (Gravity)
●Conco Corporation, Mendota, Ill.
Crane Company, Chicago. (Gun)
Delco Appliance Div., General Motors Corp., Rochester, N. Y. (Gun)
D'Elia Oil Burner Co., Inc., Bridgeport, Conn. (Gun)
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Eastern Oil & Equipment Co., Portland, Me. (Gun)
Electrol Incorporated, Clifton, N. J. (Gun)
Excello Oil Heating Corp., Omaha, Nebr.
Fairfield Oil Heating Co., Inc., Greenwich, Conn. (Gun)
Fargo Foundry Co., Fargo, N. D. (Gun)
Florence Stove Co., Gardner, Mass. (Gravity)
General Electric Co., Bloomfield, N. J. (Gun)
General Oil Heating Corp., West New York, N. J. (Gun)
Gilbert & Barker Mfg. Co., Springfield, Mass. (Gun)
Gilmore, Jackson E., Columbus, Ohio. (Gravity)
Gold Star Oil Burner Mfg. Co., Inc., Yonkers, N. Y. (Gun)
Gould Engineering Co., Cambridge, Mass. (Gun)
Green Colonial Furnace Company, Des Moines, Iowa. (Gun)
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hardinge Oil Burner & Mfg. Co., Chicago.
Hart Oil Burner Corp., Peoria, Ill. (Gun)
Harvey-Whipple, Inc., Springfield, Mass. (Gun)
Heatseal Burner Co., Omaha, Nebr. (Gun)
Heil Co., Milwaukee, Wis. (Gun)
Herco Oil Burner Corp., Lancaster, Pa.
Hess Warming and Ventilating Co., Chicago, Ill.
Hipoint Corp., Bellefontaine, O.
Holtum Mfg. Co., Freeport, Ill. (Gun)
Homer Furnace & Foundry Corp., Coldwater, Mich. (Gun)
Hotentot Co., Inc., Omaha, Nebr. (Gun)
Hubbard Co., Minneapolis, Minn. (Gun)
Hueller Mfg. Co., Inc., H. J., Brooklyn, N. Y. (Gun)
Iowa Foundry Co., Sioux City, Ia.
Jackson Oil Burner Co., Detroit. (Vertical Gun)
Johnson Co., S. T., Oakland, Cal., and Philadelphia. (Gun)
Johnson Mfg. Co., Waterloo, Ia. (Gun)
Kais Sunrise Works, Detroit, Mich. (Gravity and rotary)
Kaybar Burner Corp., Chicago, Ill.
Keith Furnace Co., Des Moines, Ia. (Gun)
Kleen Heet, Inc., Chicago, Ill. (Gun and Gravity)
Korth Oil Burner Corp., Roselle Park, N. J. (Rotary and gun)
Laco Oil Burner Co., Griswold, Ia. (Gun and Gravity)
Landwehr Heating Corp., Philadelphia, Pa.
Leahy Mfg. Co., Los Angeles, Cal.
Leeson Air Conditioning Corporation, Detroit, Mich. (Gun)
Lennox Furnace Co., Marshalltown, Iowa. (Gun—Pressure Atomizing)
Little Burner Co., Inc., H. C., San Rafael, Cal. (Gravity)
Littleford Bros., Inc., Cincinnati, O.
Majestic Co., Huntington, Ind. (Gun)
Malleable Iron Fittings Co., Banford, Conn. (Gun)
●May Oil Burner Corp., Baltimore, Md. (Gun)
Mayflower Oil Burner Corp., West New York, N. J. (Gun)
●Meyer Furnace Co., Peoria, Ill. (Gun)
Miller Co., Meriden, Conn.
ModernAire Co., Div. Des Moines Stove Repair Co., Des Moines, Ia.

● Advertisement in this issue. See Index to Advertisers, page 252

Montag Stove & Furnace Works, Portland, Ore. (Gun)
National Airoil Burner Co., Philadelphia, Pa. (Gun)
National Iron Works, San Diego, Cal.
Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit, Mich.
Nu-Way Corp., Rock Island, Ill. (Gun)
Oil Devices, Chicago. (Pot Type)
Pan-American Engineering Company, Berkeley, Cal. (Gun, rotary and turbine)
Paragon Oil Burner Corp., Brooklyn, N. Y.
Peerless Oil Burner Co., Inc., Kansas City, Mo. (Gravity)
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa. (Gun)
Petroleum Heat & Power Co., Stamford, Conn. (Gun)
Preferred Utilities Manufacturing Corp., New York City.
Pressure Oil Burners, Inc., York, Pa. (Gun)
Quaker Mfg. Co., Chicago. (Gravity)
Quick Furnace & Supply Co., Des Moines, Ia.
Quiet-Heet Mfg. Corp., Newark, N. J. (Gun)
●Quincy Stove Mfg. Co., Quincy, Ill. (Gravity)
R-S Products Corp., Philadelphia, Pa. (Gun)
Ray Oil Burner Co., San Francisco, Cal. (Gun, gravity and rotary)
Reif-Rexoil, Inc., Buffalo, N. Y.
Rotary Mfg. Co., Los Angeles, Cal. (Rotary)
Round Oak Co., Dowagiac, Mich. (Gun)
Rudy Furnace Co., Dowagiac, Mich. (Gun)
●Rybolt Heater Company, Ashland, Ohio. (Gun)
Sanmyer Corporation, Chicago. (Gun)
Sandberg Co., H. J., Portland, Ore.
Scott-Newcomb, Inc., St. Louis, Mo. (Gun)
Sentry Mfg. Co., Omaha, Nebr. (Gun)
Shedlov Oil Burners, Inc., Minneapolis, Minn. (Gravity, gun)
Silent Glow Oil Burner Corp., Hartford, Conn. (Gun and rotary)
Silent Sioux Oil Burner Corp., Orange City, Ia. (Gravity)
Simplex Oil Heating Corp., Newark, N. J. (Gun, rotary and turbine)
Sundstrand Engineering Co., Rockford, Ill. (Gun)
Syncro-Flame Burner Corp., Willimantic, Conn. (Gun, rotary)
●Syncromatic Air Conditioning Corporation, Milwaukee.
Timken Silent Automatic Div., Timken-Detroit Axle Co., Detroit. (Gun and rotary)
Todd Combustion Equipment, Inc., New York City.
United States Burner Corp., Wethersfield, Conn. (Gun)
Universal Manufacturers, Inc., Midland Park, N. J.
Valley Mfg. Co., Athol, Mass. (Gun and rotary)
Victor Oil Burner Mfg. Co., Hartford, Conn. (Gravity)
Volcano Burner Corp., New York City. (Gun)
Vortex Mfg. Co., Portland, Ore.
Waterman-Waterbury Co., Minneapolis. (Gun)
Wayne Oil Burner Co., Fort Wayne, Ind. (Gun and gravity)
Weatherall Engineers, Inc., Providence, R. I. (Gun)
Westwick & Son, Inc., John, Galena, Ill. (Gun)
Williams Oil-O-Matic Heating Corp., Bloomington, Ill. (Gun)
●Wood Industries, Inc., Gar, Detroit, Mich. (Gun)
Woolery Machine Co., Minneapolis, Minn. (Gun)
York Ice Machinery Corp., York, Pa. (Gun)
York Oil Burner Co., Inc., York, Pa. (Gun)

BURRING MACHINES

See Machines, Burring

CABINETS AND CASINGS

Acme Tin Plate & Roofing Supply Co., Philadelphia.
Airwasher Corporation, Lansing, Mich.
Armstrong Furnace Company, Columbus, Ohio.
Berger Mfg. Co., Div. of Republic Steel Corp., Canton, O.
Biersach & Niedermeyer Company, Milwaukee.
●Brundage Co., Kalamazoo, Mich.
Char-Gale Mfg. Co., Minneapolis, Minn.
Chicago Metal Mfg. Co., Chicago.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Dry-Zero Corporation, Chicago.
Falstrom Co., Passaic, N. J.
General Blower Corp., San Francisco.
General Metal Products Co., St. Louis, Mo.
Hauserman Co., E. F., Cleveland.
Lau Blower Co., Dayton, Ohio.
Lennox Furnace Co., Marshalltown, Ia.
Maysteel Products, Inc., Mayville, Wis.
Micheli Air Conditioning Co., Inc., Schenectady, N. Y.
Mullins Mfg. Corp., Warren, Ohio.
National Manufacturing & Engineering Co., Detroit.
Reliable Sheet Metal Engineering Co., Chicago. (Metal)
Riester & Thesmacher Co., Cleveland.
St. Charles Mfg. Co., St. Charles, Ill.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Standard Pressed Steel Co., Jenkintown, Pa.
Steinhorst & Sons, Inc., Emil, Utica, N. Y.
Waterman-Waterbury Company, Minneapolis.

CAPS AND TOPS, CHIMNEY

●Accurate Mfg. Works, Chicago, Ill.
Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
●Adams Company, The, Dubuque, Iowa.
●Allen Corp., Detroit, Mich.
Ames Co., W. R., San Francisco, Cal.
Chicago Metal Mfg. Co., Chicago, Ill.
Edwards Mfg. Co., Inc., Cincinnati, O.
Excelsior Steel Furnace Co., Chicago, Ill.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
Iwan Brothers, South Bend, Ind.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y. (Shanty and Revolving Caps)
Lamb & Ritchie Co., Cambridge, Mass.
Little Burner Co., Inc., H. C., San Rafael, Cal.
Martin Metal Mfg. Co., Wichita, Kan.
●Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Wis.
Neemes Foundry, Inc., Troy, N. Y.
Northern Furnace & Supply Company, Billings, Mont.
●Osborn Co., J. M. & L. A., Cleveland.
Royal-Apex Mfg. Corp., Brooklyn.
Ryniker Sheet Metal Works, Inc., Billings, Mont.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Southbridge Roofing Co., Inc., Southbridge, Mass.
Standard Ventilator Co., Lewisburg, Pa.
Sterling Foundry Company, Sterling, Ill. (Cast iron)
Tierney Rotor Ventilator Co., Minneapolis, Minn.
Vail Mfg. Co., Fort Wayne, Ind.

CASINGS

See Cabinets and Casings

CAULKING COMPOUNDS

See Compounds, Caulking

CEILINGS, METAL

Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Ceiling Mfg. Co., New York City.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Edwards Mfg. Co., Inc., Cincinnati, O.
Friedley-Voshardt Co., Chicago, Ill.
International Steel Company, Evansville, Ind.
Klauer Mfg. Co., Dubuque, Ia.
Martin-Parry Corp., York, Pa.
Mesker & Co., Geo. L., Evansville, Ind.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Reeves Steel & Mfg. Co., Dover, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Simplex Ceiling Co., New York City. (Perforated Panels)
Southern States Iron Roofing Co., Savannah, Ga.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Wheeling Corrugating Co., Wheeling, W. Va.
Woolwine Metal Products Co., Los Angeles, Cal.

CEMENT, FURNACE

Acme Asbestos Covering & Flooring Co., Chicago.
Armstrong Co., Detroit, Mich.
Buckeye Products Co., Cincinnati, O.
Carey Co., Philip, Lockland, Ohio.
Chicago Fire Brick Company, Chicago.
Clinton Metallic Paint Co., Clinton, N. Y. (Asbestos)
Colebrook & Sons, Inc., W. H., Syracuse, N. Y.
Continental Products Co., Euclid, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
●Fireline Stove & Furnace Lining Co., Chicago, Ill.
Green Fire Brick Co., A. P., Mexico, Mo.
Hercules Chemical Co., Inc., New York City.
Hetzel Roofing Products Co., Newark, N. J.
Johns-Manville, New York City.
Keasbey Co., Robert A., New York City. (Asbestos)
Krehbiel Co., J. H., Chicago, Ill.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Lastik Products Co., Inc., Pittsburgh, Pa.
McLeod & Henry Co., Inc., Troy, N. Y.
Munn and Steele, Inc., Newark, N. J.
Nebel Manufacturing Co., Cleveland.
Pecora Paint Co., Philadelphia, Pa.
Plastic Products Co., Detroit, Mich.
Preferred Utilities Mfg. Corp., New York City.
Presstite Engineering Co., St. Louis, Mo.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City.
Refractory & Insulation Corp., New York City..
Robinson Insulation Co., Great Falls, Mont.
Ruberoid Co., New York City.
Rutland Fire Clay Co., Rutland, Vt.
●Sall Mountain Co., Chicago, Ill.
Sauereisen Cements Co., Sharpsburg, Pa.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
U. S. Stoneware Company, Akron, Ohio and New York City.
Walsh Refractories Corp., St. Louis, Mo.
Wilhelm Co., A., Reading, Pa.
●Wilson, Inc., Grant, Chicago, Ill. (Asbestos)

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CEMENT, INSULATING

Acme Asbestos Covering & Flooring Co., Chicago.
Baldwin-Hill Co., Trenton, N. J. (Rockwool)
Barrett Division, Allied Chemical & Die Corporation, New York City.
Bird Archer Co., Philadelphia.
Botsfield Refractories Co., Philadelphia.
Carey Co., Philip, Lockland, Ohio. (Asbestos, Mag., Rockwool)
Carney Rockwool Co., Mankato, Minn. (Rockwool)
Chicago Fire Brick Co., Chicago, Ill. (Asbestos)
Clinton Metallic Paint Co., Clinton, N. Y.
Colebrook & Sons, Inc., W. H., Syracuse, N. Y.
Eagle-Picher Lead Co., Cincinnati, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa. (Asbestos)
Green Fire Brick Company, A. P., Mexico, Mo. (Vermiculite)
Industrial Research, Lansdowne, Pa.
International Vermiculite Co., Springfield, Ill. (Vermiculite)
Johns-Manville, New York City (Asbestos)
Keasbey Co., Robert A., New York City. (Asbestos)
Keasbey & Mattison Co., Ambler, Pa. (Asbestos)
Krehbiel Co., J. H., Chicago (Asbestos, mineral wool)
McLeod & Henry Co., Inc., Troy, N. Y.
Mitchell & Smith, Inc., Mineral Felt Div., Toledo, O. (Rock Wool)
Munn and Steele, Inc., Newark, N. J. (Vermiculite)
National Gypsum Co., Buffalo.
Nelson Mfg. Co., B. F., Minneapolis. (Vermiculite, Asbestos)
Norristown Magnesia & Asbestos Co., Norristown, Pa.
Ohmiac Paint & Refining Co., Chicago. (Asphalt, Asbestos)
●Owens-Corning Fiberglas Corp., Toledo, Ohio. (Mineral Wool)
Poe Co., C. W., Cleveland. (Mineral Wool)
Preferred Utilities Mfg. Corp., New York City.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City. (Asbestos)
Ramtite Co., Div. of S. Obermayer Co., Chicago.
Refractory & Insulation Corp., New York City. (Wool)
Rex Clay Products Co., Detroit.
Robinson Insulation Co., Great Falls, Mont. (Vermuculite)
Rock Fleece Co., El Paso, Texas.
Ruberoid Co., New York City. (Asbestos)
Rutland Fire Clay Co., Rutland, Vt. (Asbestos)
●Sail Mountain Co., Chicago, Ill.
Sauereisen Cements Co., Pittsburgh.
Schundler & Co., Inc., F. E., Joliet, Ill.
Smith & Kanzler Corp., Elizabeth, N. J. (Asbestos)
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit. (Rock wood and asbestos)
Tennessee Products Corp., Nashville, Tenn. (Mineral Wool)
Therminsul Corp., Kalamazoo, Mich.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
United States Gypsum Co., Chicago. (Asbestos)
United States Mineral Wool Co., Chicago. (High temperature mineral wool)
Universal Zonolite Insulation Co., Chicago (Vermiculite)
Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
●Wilson, Inc., Grant, Chicago, Ill. (Asbestos)

CEMENT, ROOF

Acme Asbestos Covering & Flooring Co., Chicago.
Acme Refining Co., Cleveland, O. (Liquid and plastic)
Acorn Refining Co., Cleveland.
All States Roofers Equipment & Material Co., Chicago, Ill.
American-Marietta Company, Chicago.
Armstrong Co., Detroit.
Barber Asphalt Corp., Barber, N. J.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Bird & Son, Inc., East Walpole, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carey Co., Philip, Lockland, Ohio.
Carter Paint Co., Liberty, Ind.
Celotex Corp., Chicago.
Certain-teed Products Corp., New York City.
Clinton Metallic Paint Co., Clinton, N. Y.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Flintkote Co., New York City.
Ford Roofing Products Co., Chicago.
Glidden Co., Cleveland, O.
Hetzel Roofing Products Co., Newark, N. J.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia. (Asphalt)
Johns-Manville, New York City.
Koppers Company, Pittsburgh.
Krehbiel Co., J. H., Chicago. (Asphaltic, Gilsonite, Elaterite)
Lastik Products Co., Inc., Pittsburgh, Pa.
Lehon Company, Chicago.
Midland Paint & Varnish Co., Cleveland. (Fiberseal)
Miller & Son, C. Arthur, Elmira, N. Y.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
Nelson Mfg. Co., B. F., Minneapolis. (Master Asphalt)
North American Fibre Products Co., Cleveland.
Ohmiac Paint & Refining Co., Chicago, Ill.
Pecora Paint Co., Philadelphia, Pa. (Asbestos)
Presstite Engineering Co., St. Louis, Mo.
Pyrolite Products Co., Cleveland, O.
Rock Fleece Company, El Paso, Texas.
Ruberoid Co., New York City.
Rutland Fire Clay Co., Rutland, Vt.
Smooth-On Mfg. Co., Jersey City, N. J.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland, O.
United States Gypsum Co., Chicago, Ill.
Wilhelm Co., A., Reading, Pa.

CHAIN, FURNACE

American Chain Div., American Chain & Cable Co., Inc., York, Pa.
●Bead Chain Mfg. Co., Bridgeport, Conn.
Bridgeport Chain & Mfg. Co., Bridgeport, Conn.
Corbin Screw Corp., New Britain, Conn.
●Hart & Cooley Mfg. Co., Holland, Michigan.
Hodell Chain Co., Cleveland.
McKay Co., York, Pa.
Russell Mfg. Co., John M., Naugatuck, Conn.
Turner & Seymour Mfg. Co., Torrington, Conn.

CHAMBERS, COMBUSTION, PREFORMED

Barclay, Inc., Robert, Chicago.
Chicago Fire Brick Company, Chicago.
Gilbert & Son, Harry E., Bridgeport, Conn. (Radiant Silicons)
Green Fire Brick Company, A. P., Mexico, Mo.
Harvey, Inc., Sid, Valley Stream, N. Y.
McLeod & Henry Co., Inc., Troy, N. Y.
Monogram Combustion Chamber Co., Philadelphia.
Munn and Steel, Inc., Newark, N. J. (Light fired refractory)
Rex Clay Products Company, Detroit.
Universal Zonolite Insulation Co., Chicago. (Vermiculite concrete)

CHANNELS

See Angles, Bars, Beams, Channels and Tees (Light Weight Shapes)

CHEMICALS, RUST PREVENTIVE FOR PRETREATING METALS

American Chemical Paint Co., Ambler, Pa.
Neilco Chemical Co., Detroit.
Neilson Chemical Co., Detroit.
North American Fibre Products Co., Cleveland.
Parker Rust-Proof Co., Detroit.
Rust Products Co. of America, Chicago.
Rusticide Products Co., Cleveland.
Standard Steel Spring Co., Gary, Ind.

CHIMNEY CAPS

See Caps and Tops, Chimney

CLEANERS FOR STAINLESS STEEL

●United States Steel Supply Co., Chicago.

CLEANERS, POLISHERS AND FINISHERS, METAL

(Liquid, Paste and Powder)

Nu Steel Company, Chicago.
Quigley Company, Inc., New York City. (Powder, Cake)
Sonneborn Sons, Inc., L., New York City.
Tamms Silica Company, Chicago.

CLEANERS, VACUUM, FURNACE

Baker Furnace & Cleaner Mfg. Co., Toledo, O.
Breuer Electric Mfg. Co., Chicago, Ill.
Clements Mfg. Co., Chicago.
Densmore-Quinlan Co., Kenosha, Wis.
Dickson Coal Co., New York City.
●Doyle Vacuum Cleaner Co., Grand Rapids, Mich.
Electric Vacuum Cleaner Co., Inc., Cleveland, O.
Ideal Commutator Dresser Co., Sycamore, Ill.
Kent Co., Inc., Rome, N. Y.
Minn-Kota Foundry & Mfg. Co., Fargo, N. D.
National Super Service Co., Toledo, O.
Spencer Turbine Co., Hartford, Conn.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.

CLEAT BENDERS

See Machines, Cleat Bending

CLIPS, FASTENING, FOR ROOFING

American Sheet Metal Works, New Orleans, La.
Bard Manufacturing Co., Bryan, O.
●Berger Brothers Co., Philadelphia, Pa.
Bridesburg Foundry Co., Philadelphia, Pa.

● Advertisement in this issue. See Index to Advertisers, page 253

Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Edwards Mfg. Co., Inc., Cincinnati, O.
Milcor Steel Co., Milwaukee, Wis.
National Stainless Clip Corp., New York City. (Stainless)
•Osborn Co., J. M. & L. A., Cleveland, O.
Pfeifer, Wm., New York City.
Southbridge Roofing Co., Inc., Southbridge, Mass.

CLIPS AND TIPS, DAMPER

•Adams Company, The, Dubuque, Iowa.
•Air Control Products, Inc., Coopersville, Mich.
•Berger Bros. Co., Philadelphia, Pa.
•Gerett Co., M. A., Milwaukee.
Goese Mfg. Co., Milwaukee.
Grand Rapids Die & Tool Co., Grand Rapids, Mich.
Griswold Mfg. Co., Erie, Pa.
•Hart & Cooley Mfg. Co., Holland, Mich.
Howes-Woods Company, Cambridge, Mass.
Kerentoff, G. L., Cincinnati.
•Meyer & Bro., Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee.
•Mueller Furnace Co., L. J., Milwaukee, Wis.
Schoedinger, F. O., Columbus, Ohio.
Stover Mfg. & Engine Co., Freeport, Ill.
•United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland, O.

CLOTH AND NETTING, WIRE

Buffalo Wire Works Company, Buffalo, N. Y.

CO_2 ANALYZERS

See Analyzers, CO_2

COAL BURNERS, AUTOMATIC

See Stokers

COATINGS, PROTECTIVE, METAL

Carey Mfg. Co., Philip, Lockland, Ohio.
Glidden Company, Cleveland.
Pittsburgh Plate Glass Company, Pittsburgh, Pa.
Tamms Silica Company, Chicago.
United States Stoneware Co., Akron, Ohio, and New York City.

COILS, COOLING, DIRECT EXPANSION, FINNED

Advanced Refrigerating Systems Co., Philadelphia.
Aerofin Corp., Syracuse, N. Y.
Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Coils, Inc., Newark, N. J.
Beacon-Morris Corp., Boston, Mass.
Betz Corporation, Hammond, Ind.
Bohn Aluminum & Brass, Detroit.
Bush Mfg. Co., Hartford, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conditionaire Unit Co., Chicago.
Drayer & Hanson, Inc., Los Angeles, Cal.
Fedders Mfg. Co., Inc., Buffalo, N. Y.
Frigidaire Div., General Motors Corp., Dayton, Ohio.
G & O Mfg. Co., New Haven, Conn.
General Electric Co., Bloomfield, N. J.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Griscom-Russell Co., The, New York City.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Kennard, Inc., Sam, St. Louis.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
McCord Radiator & Mfg Co., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Manufacturer's Fin Coil Co., Chicago.
Mario Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
Mojonnier Brothers Co., Chicago.
Murray Mfg. Co., D. J., Wausau, Wis.
Niagara Blower Company, New York City.
Peerless of America, Inc., Marion, Indiana.
Refrigeration Appliances, Inc., Chicago, Ill.
Refrigeration Economics Co., Inc., Canton, O.
Reliance Refrigerating Machine Co., Chicago.
Rempe Co., Chicago, Ill.
Roessing Mfg. Co., Sharpsburg Sta., Pittsburgh.
Rome-Turney Radiator Co., Rome, N. Y.
Standard Galvanizing Co., Chicago, Ill.
•Sturtevant Company, B. F., Hyde Park, Boston.
Super Radiator Corp., Minneapolis.
Tilco-Fin, Inc., Brooklyn, N. Y.
Trane Co., La Crosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric & Manufacturing Co., Springfield, Mass.
Wolverine Tube Div., Calumet and Hecla Consolidated Copper Company, Detroit.
X L Refrigerating Company, Inc., Chicago.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

COILS, COOLING, WATER

Advanced Refrigerating Systems Co., Philadelphia.
Aerofin Corp., Syracuse, N. Y.
Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Coils, Inc., Newark, N. J.
Beacon-Morris Corp., Boston, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Betz Corporation, Hammond, Ind.
Bohn Aluminum & Brass, Detroit, Mich.
Bush Mfg. Co., Hartford, Conn.
Campbell Heating Co., E. K., Kansas City, Mo.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conditionaire Unit Company, Chicago.
Drayer & Hanson, Inc., Los Angeles.
Fedders Mfg. Co., Inc., Buffalo, N. Y.
Frigidaire Division, General Motors Corporation, Dayton, O.
G & O Mfg. Co., New Haven, Conn.
General Electric Co., Bloomfield, N. J.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Griscom-Russell Co., The, New York City.
Industrial Mfg. & Eng. Co., Chicago.
Johnson Fan & Blower Corp., Chicago.
Kauffman Air Conditioning Corp., St. Louis.
Kennard, Inc., Sam, St. Louis.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
McCord Radiator & Mfg. Co., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Manufacturer's Fin Coil Co., Chicago.
Mario Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
Mojonnier Brothers Co., Chicago.
Murray Mfg. Co., D. J., Wausau, Wis.
Nesbitt, Inc., John J., Philadelphia.
Niagara Blower Company, New York City.
Palmer Manufacturing Corp., Phoenix, Ariz.
Peerless of America, Inc., Marion, Indiana.
Refrigeration Appliances, Inc., Chicago, Ill.
Refrigeration Economics Co., Inc., Canton, O.
Rempe Co., Chicago, Ill.
Roessing Mfg. Co., Sharpsburg Sta., Pittsburgh.
Rome-Turney Radiator Co., Rome, N. Y.
Standard Galvanizing Co., Chicago, Ill.
•Sturtevant Company, B. F., Hyde Park, Boston.
Super Radiator Corp., Minneapolis.
Tilco-Fin, Inc., Brooklyn, N. Y.
Trane Co., La Crosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Wing Manufacturing Co., L. J., New York City.
Wolverine Tube Div., Calumet and Hecla Consolidated Copper Company, Detroit.
X L Refrigerating Co., Inc., Chicago.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

COILS, FIRE POT, HOT WATER

•Adams Company, The, Dubuque, Iowa.
Air Controls, Inc., Cleveland, O.
American Furnace & Foundry Co., Milan, Mich.
Bell & Gossett Co., Chicago.
•Brauer Supply Co., A. G., St. Louis.
Deshler Foundry & Machine Works, Deshler, O.
Devlin Mfg. Co., Thos., Burlington, N. J.
•Dowagiac Steel Furnace Co., Dowagiac, Mich.
Extruded Plastics, Inc., Norwalk, Conn.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Globe Machinery & Supply Co., Des Moines, Ia.
Harvey-Whipple, Inc., Springfield, Mass.
Hotstream Heater Co., Cleveland, O.
Kitson Co., Philadelphia, Pa.
Lennox Furnace Co., Marshalltown, Ia.
Marshall Furnace Co., Marshall, Mich.
Metzner Stove Repair Co., Kansas City, Mo.
Miller & Son, C. Arthur, Elmira, N. Y.
•Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
•Mueller Furnace Co., L. J., Milwaukee, Wis.
Murray Mfg. Co., D. J., Wausau, Wis.
National Iron Works, San Diego, Cal.
Radiator Specialty Co., Charlotte, N. C.
Rempe Co., Chicago, Ill.
Rome-Turney Radiator Co., Rome, N. Y.
Rudy Furnace Co., Dowagiac, Mich.
Taco Heaters, Inc., New York City.

COILS, HEATING

Aerofin Corp., Syracuse, N. Y.
American Coils, Inc., Newark, N. J.
•Bayley Blower Co., Milwaukee, Wis.
Beacon-Morris Corporation, Boston, Mass.
Betz Corporation, Hammond, Ind.

Bohn Aluminum & Brass, Detroit.
Bush Mfg. Co., Hartford, Conn.
Campbell Heating Co., E. K., Kansas City, Mo.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Drayer & Hanson, Inc., Los Angeles.
Fedders Mfg. Co., Inc., Buffalo.
Frigidaire Division, General Motors Corporation, Dayton, O.
G & O Mfg. Co., New Haven, Conn.
General Electric Co., Bloomfield, N. J.
Griscom-Russell Co., New York City.
Industrial Mfg. & Eng. Co., Chicago.
Johnson Fan & Blower Corp., Chicago.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Kennard, Inc., Sam, St. Louis.
Kramer Trenton Co., Trenton, N. J.
McCord Radiator & Mfg. Co., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Manufacturer's Fin Coil Co., Chicago.
Mario Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
Murray Mfg. Co., D. J., Wausau, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago.
Niagara Blower Co., New York City.
Peerless of America, Inc., Marion, Indiana.
Refrigeration Economics Co., Inc., Canton, Ohio.
Rempe Co., Chicago, Ill.
Roessing Manufacturing Co., Pittsburgh.
Rome-Turney Radiator Co., Rome, N. Y.
●Sturtevant Co., B. F., Hyde Park, Boston.
Super Radiator Corp., Minneapolis.
Tilco-Fin, Inc., Brooklyn, N. Y.
Trane Co., La Crosse, Wis.
Westinghouse Electric & Manufacturing Co., Springfield, Mass.
Wing Mfg. Co., L. J., New York City.
Wolverine Tube Div., Calumet and Hecla Consolidated Copper Company, Detroit.
York Ice Machinery Corp., York, Pa.
Young Radiator Co., Racine, Wis.

COLLECTORS, BLOW PIPE

Allington & Curtis Mfg. Co., Saginaw, Mich.
●American Air Filter Co., Inc., Louisville, Ky.
American Blower Corp., Detroit.
American Foundry Equipment Co., Mishawaka, Ind.
American Metal Products Co., Fort Worth, Texas.
●Bayley Blower Co., Milwaukee, Wis.
Blower Application Co., Milwaukee, Wis.
Bubar, Hudson, H., New York City.
Buffalo Forge Co., Buffalo, N. Y.
Clark Dust Control Company, Chicago.
Day Co., Minneapolis, Minn.
Dracco Corp., Cleveland, O.
Faraday Engineering Co., Boston.
Garden City Fan Co., Chicago, Ill.
Goethel Co., Alfred C., Milwaukee, Wis.
Goethel Sheet Metal Works, Alfred, Milwaukee, Wis.
Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
Jacobs Co., B. & J., Cincinnati, O.
Kirk & Blum Mfg. Co., Cincinnati, O.
Kluegel & Co., E., St. Paul, Minn.
Knickerbocker Co., Jackson, Mich.
Martin Metal Mfg. Co., Wichita, Kan.
New York Blower Co., Chicago, Ill.
Northern Blower Co., Cleveland, O.
Pangborn Corp., Hagerstown, Md.
Prat-Daniel Corp., Port Chester, N. Y.
Puhl & Hepper Mfg. Co., Inc., St. Louis.
Research Corp., New York City.
Ruemelin Mfg. Co., Milwaukee.
Schmieg Sheet Metal Works, Detroit.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Sly Mfg. Co., W. W., Cleveland, O.
Spencer Turbine Co., Hartford, Conn.
Steamaire Co., Cincinnati, O.
Steinhorst & Sons, Inc., Emil, Utica, N. Y.
Strandwitz & Co., Inc., W. J., Camden, N. J.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Torit Manufacturing Co., St. Paul, Minn.
Western Blower Co., Seattle, Wash.
Western Precipitation Corp., Los Angeles.
Young & Bertke Co., Cincinnati, O.

COMBUSTION CHAMBERS

See Chambers, Combustion, Preformed

COMPOUNDS, CAULKING

Accurate Metal Weather Strip Co., New York City.
Acme Refining Co., Cleveland, O.
Acorn Refining Company, Cleveland.
Allmetal Weatherstrip Co., Chicago, Ill.
Alpha Metal & Rolling Mills, Inc., Brooklyn.
American-Marietta Company, Chicago.
American Metal Weather Strip Co., Grand Rapids, Mich.
Armstrong Co., Detroit.
Asphalt Products Co., Inc., Syracuse, N. Y.
Barber Asphalt Corporation, Barber, N. J.
Barland Weatherstrip Material Co., Cleveland.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carey Co., Philip, Lockland, Ohio.
Chamberlin Metal Weatherstrip Co., Detroit.
Clinton Metallic Paint Co., Clinton, N. Y.
Continental Products Co., Euclid, O.
Flintkote Co., New York City.
Ford Roofing Products Co., Chicago.
Glidden Company, Cleveland.
Hetzel Roofing Products Co., Newark, N. J.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia.
Johns-Manville, New York City.
Krehbiel Co., J. H., Chicago, Ill.
Lastik Products Co., Inc., Pittsburgh, Pa.
Lehon Company, Chicago.
Maas and Waldstein Co., Newark, N. J.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
North American Fibre Products Co., Cleveland.
Ohmlac Paint & Refining Co., Chicago, Ill. (Asphalt)
Pecora Paint Co., Philadelphia, Pa.
Pittsburgh Plate Glass Co., Pittsburgh.
Plastic Products Co., Detroit, Mich.
Presstite Engineering Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City.
Radiator Specialty Co., Charlotte, N. C.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh.
Smooth-on Mfg. Co., Jersey City, N. J.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Company, Savannah, Ga.
Tamms Silica Company, Chicago.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland.
U. S. Stoneware Company, Akron, Ohio, and New York City.
Wilhelm Co., A., Reading, Pa.
X-Pando Corp., Long Island City, N. Y.
Yardley Venetian Blind Co., Columbus, Ohio.

COMPOUNDS, GLAZING

Acme Refining Co., Cleveland, O.
Acorn Refining Company, Cleveland.
Armstrong Co., Detroit.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Chamberlin Metal Weather Strip Co., Detroit.
Continental Products Co., Euclid, O.
Glidden Company, Cleveland.
Hetzel Roofing Products Co., Newark, N. J.
Horn Co., A. C., Long Island City, N. Y.
Lastik Products Co., Inc., Pittsburgh, Pa.
Midland Paint & Varnish Co., Cleveland.
Nebel Manufacturing Co., Cleveland.
North American Fibre Products Co., Cleveland.
Pecora Paint Co., Philadelphia, Pa.
Pittsburgh Plate Glass Company, Pittsburgh.
Plastic Products Co., Detroit, Mich.
Presstite Engineering Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Sherwin-Williams Co., Cleveland.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland.
X-Pando Corporation, Long Island City, N. Y.

COMPOUNDS, TINNING

Alpha Metal & Rolling Mills, Inc., Brooklyn.
American Solder & Flux Co., Philadelphia, Pa.
Burnley Battery & Mfg. Co., North East, Pa.
Eagle-Picher Lead Co., Cincinnati, O.
Lukens Metal Co., Thos. F., Philadelphia, Pa.
Minn-Kota Foundry & Mfg. Co., Fargo, N. Dak.
Motex Metal Process Corporation, Detroit.
Potomac Mfg. Co., Philadelphia, Pa.
●Ruby Chemical Co., Columbus, O.

COMPOUNDS, WATER-PROOFING

Acorn Refining Co., Cleveland, Ohio.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baldwin-Hill Company, Trenton, N. J.
Barber Asphalt Corp., Barber, N. J.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Carey Co., Philip, Lockland, Ohio.
Continental Products Co. Euclid, Ohio.
Flintkote Co., New York City.
Ford Roofing Products Company, Chicago.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., The, Cleveland.

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Hetzel Roofing Products Co., Newark, N. J.
Horn Co., A. C., Long Island City, N. Y.
Johns-Manville, New York City.
Koppers Co., Pittsburgh.
Lastik Products Co., Inc., Pittsburgh, Pa.
Nebel Manufacturing Co., Cleveland.
North American Fibre Products Co., Cleveland.
Pecora Paint Co., Philadelphia, Pa.
Presstite Engineering Co., St. Louis.
Pyrolite Products Co., Cleveland.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Robertson Co., H. H., Pittsburgh. (Processed Asphalt)
Sauereisen Cements Co., Sharpsburg, Pa.
Self-Vulcanizing Rubber Co., Inc., Chicago, Ill.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh.
Smooth-On Mfg. Co., Jersey City, N. J.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Technical Coatings, Inc., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Wailes Dove-Hermiston Corporation, Westfield, N. J.
Wilhelm Co., A., Reading, Pa.
X-Pando Corp., Long Island City, N. Y.

COMPRESSORS, REFRIGERATING

Air Conditioning and Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Allen Billmyre Corporation, Mamaroneck, N. Y.
Airtemp Division Chrysler Corp., Dayton, Ohio.
Baker Ice Machine Co., Inc., Omaha, Nebr.
Brunner Mfg. Co., Utica, N. Y.
Carrier Corp., Syracuse, N. Y.
Copeland Refrigeration Corp., Sidney, Ohio.
Curtis Refrigerating Machine Co., St. Louis, Mo.
Diceler Corp., Greenville, Pa.
Fairbanks, Morse & Co., Chicago.
Frick Co., Waynesboro, Pa.
Frigidaire Division, General Motors Corporation, Dayton, O.
Gale Products, Galesburg, Ill.
General Electric Co., Bloomfield, N. J.
General Machinery Co., Spokane, Wash. (Ammonia)
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Howe Ice Machine Co., Chicago.
Ingersoll-Rand, New York City.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Kelvinator Div., Nash-Kelvinator Corp., Detroit.
Merchant & Evans Co., Philadelphia, Pa.
Mills Novelty Co., Chicago, Ill.
Phoenix Ice Machine Co., Cleveland.
Reliance Refrigerating Machine Co., Chicago, Ill.
Reynolds Manufacturing Co., Springfield, Mo.
Servel, Inc., Evansville, Ind.
Standard Computing Scale Co., Air Cond. and Refrigeration Div., Detroit.
Starr Piano Co., Richmond, Ind.
Stewart Ice Machine Co., Los Angeles, Cal.
Tecumseh Products Co., Tecumseh, Mich.
Trane Co., LaCrosse, Wis.
Uniflow Manufacturing Co., Erie, Pa.
Universal Cooler Corp., Marion, Ohio.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
Wittenmeier Machinery Co., Chicago, Ill.
X L Refrigerating Co., Chicago, Ill.
York Ice Machinery Corp., York, Pa.

CONDUCTOR PIPE

See Pipe, Conductor

CONNECTIONS, DUCT, FLEXIBLE

(Asbestos, Canvas, etc.)

Canvas Products Co., St. Louis.
Carpenter & Co., Geo. B., Chicago.
Felters Co., Inc., The, Boston.
United States Rubber Co., New York City.
●Wilson, Inc., Grant, Chicago. (Asbestos)

CONNECTORS, METAL, FOR SUBSTITUTE DUCTS

●Sheet Lock Co., Chicago.

CONNECTORS, WOOD, FOR SUBSTITUTE DUCTS

●Klomparens Lock-Joint Co., Arlington, Va.

CONTROL SYSTEMS, FORCED AIR FURNACE, HAND-FIRED (PACKAGE)

(Bonnet Control of Blower)

Barclay, Inc., Robert, Chicago.
Cook Electric Co., Chicago.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, Ohio.
Russell Electric Company, Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Company, Attleboro, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

CONTROL SYSTEMS, FORCED AIR FURNACE, HAND-FIRED (PACKAGE)

(Thermostat Control of Blower)

Cook Electric Co., Chicago.
●General Controls Co., Glendale, Cal.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Company, Attleboro, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

CONTROL SYSTEMS, GRAVITY FURNACE, HAND-FIRED (PACKAGE)

●Automatic Products Co., Milwaukee.
Cook Electric Co., Chicago.
Defender Automatic Regulator Co., St. Louis.
●General Controls Co., Glendale, Cal.
Gleason-Avery, Inc., Auburn, N. Y.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, Ohio.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Company, Attleboro, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

CONTROL SYSTEMS, ZONE DISTRIBUTION, COMPLETE

Au-Temp-Co Corp., New York City.
Barber-Colman Company, Rockford, Ill.
Cook Electric Co., Chicago.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
Sampsel Time Control, Inc., Spring Valley, Ill.

CONTROLS, COMBINED FAN AND LIMIT, LINE VOLTAGE

Defender Automatic Regulator Co., St. Louis.
Detroit Lubricator Co., Detroit.
Friez & Sons, Julien P., Towson, Md.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, Ohio.
Russell Electric Company, Chicago.
Schwab Safe Co., Lafayette, Ind.
United Electric Controls Co., South Boston, Mass.
●White-Rodgers Electric Co., St. Louis.

CONTROLS, COMBINED FAN AND LIMIT, LOW VOLTAGE

Cook Electric Co., Chicago.
Defender Automatic Regulator Co., St. Louis.
Detroit Lubricator Co., Detroit.
Friez & Sons, Julien P., Towson, Md.
McCorkle Co., D. H., Berkeley, Cal.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Russell Electric Company, Chicago.
Schwab Safe Co., Lafayette, Ind.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

CONTROLS, COMBUSTION, BONNET OR SMOKE-PIPE, LINE VOLTAGE

Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit.
●General Controls Co., Glendale, Cal.

Hays Corp., Michigan City, Ind.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago
Sampsel Time Control, Inc., Spring Valley, Ill.

CONTROLS, COMBUSTION, BONNET OR SMOKE-PIPE, LOW VOLTAGE

Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
●White Manufacturing Co., St. Paul, Minn.

CONTROLS, EFFECTIVE TEMPERATURE

Barber-Colman Co., Rockford, Ill.
Friez & Sons, Julien P., Towson, Md.
Fulton Sylphon Co., Knoxville, Tenn.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Tagliabue Mfg. Co., C. J., Brooklyn.

CONTROLS, FAN, LINE VOLTAGE

Allen-Bradley Company, Milwaukee.
Arrow-Hart & Hegeman Electric Co., Hartford, Conn.
Barber-Colman Company, Rockford, Ill.
Clark Controller Co., Cleveland.
Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
Gleason-Avery, Inc., Auburn, N. Y.
Hart Manufacturing Co., Hartford, Conn.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
Paragon Electric Co., Chicago.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Ranco Inc., Columbus, O.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Co., Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White-Rodgers Electric Co., St. Louis.

CONTROLS, FAN, LOW VOLTAGE

Allen-Bradley Company, Milwaukee, Wis.
Arrow-Hart & Hegeman Electric Co., Hartford, Conn.
Barber-Colman Co., Rockford, Ill.
Clark Controller Co., Cleveland.
Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
Gleason-Avery, Inc. Auburn, N. Y.
McCorkle Co., D. H., Berkeley, Cal.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Co., Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

CONTROLS, HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS, PNEUMATIC

Atlas Valve Company, Newark, N. J.
Bristol Co., Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Co., Knoxville, Tenn.
Johnson Service Co., Milwaukee, Wis.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Tagliabue Mfg. Co., C. J., Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.

CONTROLS, LIMIT, LINE VOLTAGE

Allen-Bradley Co., Milwaukee, Wis.
Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md.
General Electric Co., Schenectady, N. Y.
Gleason-Avery, Inc., Auburn, N. Y.
Hart Manufacturing Co., Hartford, Conn.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Sarco Company, Inc., New York City.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Company, Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White Manufacturing Co., St. Paul.
●White-Rodgers Electric Co., St. Louis, Mo.

CONTROLS, LIMIT, LOW VOLTAGE

Allen-Bradley Company, Milwaukee, Wis.
●Automatic Products Co., Milwaukee, Wis.
Cook Electric Co., Chicago.
Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Gleason-Avery, Inc., Auburn, N. Y.
McCorkle Co., D. H., Berkeley, Cal.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Company, Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis, Mo.

CONTROLS, OIL BURNER, COMPLETE ASSEMBLY

Au-Temp-Co Corp., New York City.
●Automatic Products Co., Milwaukee.
Defender Automatic Regulator Co., St. Louis.
Detroit Lubricator Co., Detroit, Mich.
●General Controls Co., Glendale, Cal.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee, Wis.
Schwab Safe Co., Lafayette, Ind.

CONTROLS, STOKER, COMPLETE ASSEMBLY

Au-Temp-Co Corp., New York City.
Defender Automatic Regulator Co., St. Louis.
Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md.
Gleason-Avery, Inc., Auburn, N. Y.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Palmer Electric Co., Chicago.
Paragon Electric Co., Chicago.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Spencer Theromstat Co., Attleboro, Mass.
●White-Rodgers Electric Co., St. Louis, Mo.

CONTROLS, WINDOW CONDENSATION

Friez & Sons, Julien P., Towson, Md.

COOLING SURFACE

See Coils, Cooling, Water

COPPERS, SOLDERING

●American Brass Company, Waterbury, Conn.
Berns Co., Inc., Otto, Rochester, N. Y.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Clendenin Brothers, Inc., Baltimore.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Dual Remote Control Co., Wayne, Mich.
Electric Materials Co., North East, Pa.
Electric Soldering Iron Co., Inc., Deep River, Conn. (Electric)

● Advertisement in this issue. See Index to Advertisers, page 252

Everhot Mfg. Co., Maywood, Ill.
General Electric Co., Schenectady, N. Y.
Hexacon Electric Company, Roselle Park, N. J.
●Hussey & Co., C. G., Pittsburgh, Pa.
Ideal Commutator Dresser Co., Sycamore, Ill.
Imperial Brass Mfg. Co., Chicago.
Insto-Gas Corporation, Detroit.
Lenk Mfg. Company, Newton Lower Falls, Mass.
Linde Air Products Co., The, New York City.
Minn-Kota Foundry & Mfg. Co., Fargo, N. Dak.
●Parker-Kalon Corp., New York City.
●Peck, Stow & Wilcox Co., Southington, Conn.
Reiner & Campbell Co., Inc., Elizabeth, N. J. (Carbide)
Revere Copper and Brass Incorporated, New York City.
Sheet Metal Mfg. Co., Brooklyn.
Sight Feed Generator Co., Richmond, Ind.
Stanley Tools, New Britain, Conn.
Sta-Warm Electric Co., Ravenna, Ohio.
Torit Manufacturing Co., St. Paul, Minn.
Turner Brass Works, Sycamore, Ill.
Vulcan Electric Co., Danvers, Mass.
Wall Chemicals Div., Liquid Carbonic Corp., Chicago.
Weiss & Co., H., New York City.

COUPLINGS, FLEXIBLE, POWER TRANSMISSION

Ajax Flexible Coupling Co., Westfield, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Flexible Coupling Co., Erie, Pa.
Bartlett Hayward Co., Baltimore, Md.
Blood Brothers Machine Co., Allegan, Mich. (Universal Joints)
Boston Gear Wks., Inc., North Quincy, Mass.
Caldwell Co., W. E., Louisville, Ky.
Certified Flexible Couplings, New York, N. Y.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Co., Chicago, Ill.
Congress Die Casting Div., Congress Tool & Die Co., Detroit.
Continental Diamond Fibre Co., Newark, Del.
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
De Laval Steam Turbine Co., Trenton, N. J.
Diamond Chain & Mfg. Co., Indianapolis, Ind.
Dodge Mfg. Co., Mishawaka, Ind.
Flexo Supply Co., Inc., St. Louis, Mo.
Guardian Utilities Co., Michigan City, Ind.
Jones Foundry Machine Co., W. A., Chicago, Ill.
Lewis & Co., Inc., Chas. S., St. Louis, Mo.
Link-Belt Co., Chicago, Ill.
Lord Mfg. Co., Erie, Pa.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Medart Co., St. Louis, Mo.
Mercury Clutch Corporation, Massillon, Ohio.
Moran Flexible Steam Joint Co., Louisville, Ky.
Morse Chain Co., Ithaca, N. Y.
Poole Foundry & Machine Co., Baltimore, Md.
Shallcross Co., Philadelphia, Pa.
Smith, Inc., Winfield H., Springville, N. Y.
Thermoid Rubber Division of Thermoid Co., Trenton, N. J.
United States Rubber Co., New York City.
Waldron Corp., John, New Brunswick, N. J.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Whitney Chain & Mfg. Co., The, Hartford, Conn.
Wood's Sons Co., T. B., Chambersburg, Pa.

CRIMPING MACHINES

See Machines, Crimping

DAMPER MOTORS

See Motors, Damper, Furnace Draft, Electrical

DAMPER CONTROLS

See Regulators, Damper Sets

DAMPER REGULATOR SETS

See Regulators, Damper Sets

DAMPERS, FOR WARM AIR PIPE

●Adams Company, Dubuque, Iowa.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y. (Tin)
Lennox Furnace Co., Marshalltown, Ia.
●Peerless Foundry Company, Inc., Indianapolis, Ind.
Sheet Metal Mfg. Co., Inc., Brooklyn.
●United States Register Co., Battle Creek, Mich.

DAMPERS, SMOKE PIPE

●Adams Company, The, Dubuque, Iowa.
●Brauer Supply Co., A. G., St. Louis, Mo.
Bros Boiler & Mfg. Co., Wm., Minneapolis, Minn.
Char-Gale Mfg. Co., Minneapolis.
Dickson Coal Co., New York City.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Eselgroth & Co., Newark, N. J.
Front Rank Furnace Company, Div. Liberty Foundry Co., St. Louis.
Grand Rapids Die & Tool Co., Grand Rapids, Mich.
Griswold Mfg. Co., Erie, Pa.
Hotstream Heater Co., Cleveland.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y. (Cast Iron)
Keith Furnace Co., Des Moines, Ia.
Maple City Furnace Co., Monmouth, Ill.
Martin Metal Mfg. Co., Wichita, Kan.
Metzner Stove Repair Co., Kansas City, Mo.
●Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Wis.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Peerless Foundry Company, Inc., Indianapolis, Ind.
Preferred Utilities Manufacturing Corp., New York City.
Royal-Apex Mfg. Corp., Brooklyn, N. Y.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Stover Mfg. & Engine Co., Freeport, Ill.
●United States Register Co., Battle Creek, Mich.
●Walker Mfg. & Sales Corp., St. Joseph, Mo.
Williamson Heater Co., Cincinnati, O.

DAMPERS, STACK HEAD

Air Conditioning Products Co., Detroit.
Richmond Radiator Company, Inc., Uniontown, Pa.
Young Regulator Co., Cleveland.

DIES

See Presses and Dies

DIFFUSERS, AIR, HIGH VELOCITY

Air Devices, Inc., New York City.
Air & Refrigeration Corporation, New York City.
Anemostat Corporation of America, New York City.
Barber-Colman Company, Rockford, Ill.
●Connor Eng. Corp., Dorex Div., New York City. (High Velocity)
Demuth & Sons, Charles, Jamaica, N. Y.
Guth Company, Edwin F., St. Louis (Ventilating, Diffusing, Terminals)
Niagara Blower Company, New York City.
●Tuttle & Bailey, Inc., New Britain, Conn.
Waterloo Register Co., Waterloo, Ia.
Wilster Air Devices, Inc., Cleveland.

DOORS, HOLLOW METAL

Advance Insulating Co., Pittsburgh.
American Sheet Metal Works, New Orleans, La.
Bayer Co., A. J., Los Angeles, Cal.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Decatur Iron & Steel Co., Decatur, Ala.
Detroit Steel Products Co., Detroit.
Edwards Mfg. Co., Inc., Cincinnati, O.
International Steel Co., Evansville, Ind.
Kawneer Co., Niles, Mich.
Maysteel Products, Inc., Mayville, Wis.
Metal Door & Trim Co., La Porte, Ind.
Newman Brothers, Inc., Cincinnati, O.
Perkinson & Brown, Chicago, Ill.
Richmond Fireproof Door Co., Richmond, Ind.
Truscon Steel Co., Youngstown, O.

DOORS, KALAMEIN

American Sheet Metal Works, New Orleans, La.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Cincinnati Mfg. Co., Cincinnati, O.
Dusing & Hunt, Inc., Buffalo.
Edwards Mfg. Co., Inc., Cincinnati, O.
Empire Door Co., Inc., New York City.
Herrmann & Grace Co., Brooklyn, N. Y.
International Steel Co., Evansville, Ind.
Lee & Son Co., Thomas, Cincinnati, O.
Mahon Co., R. C., Detroit, Mich.
Mesker & Co., Geo. L., Evansville, Ind.
Moeschl-Edwards Corrugating Co., Inc., Cincinnati.
Newman Brothers, Inc., Cincinnati, O.
Perkinson & Brown, Chicago, Ill.
Richmond Fireproof Door Co., Richmond, Ind.
Syracuse Fire Door Corp., Syracuse, N. Y.

DOORS AND SHUTTERS, FIRE

American Sheet Metal Works, New Orleans, La.
Bardes Range & Foundry Co., E. H., Cincinnati, O.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Cornell Iron Works, Inc., Long Island City, N. Y.
Detroit Steel Products Co., Detroit.
Dusing & Hunt, Inc., Buffalo.
Edwards Mfg. Co., Inc., Cincinnati, O.
Empire Door Co., Inc., New York City.
Falstrom Co., Passaic, N. J.
Gehri Company, Tacoma, Wash.

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Herrmann & Grace Co., Brooklyn, N. Y.
International Steel Co., Evansville, Ind.
Jamar Co., Walker, Duluth, Minn.
Kinnear Mfg. Co., Columbus, O.
Mahon Co., R. C., Detroit, Mich.
Maysteel Products, Inc., Mayville, Wis.
Merchant & Evans Co., Philadelphia, Pa.
Mesker & Co., Geo. L., Evansville, Ind.
Moeschl-Edwards Corrugating Co., Inc., Cincinnati.
Perkinson & Brown, Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Richmond Fireproof Door Co., Richmond, Ind.
Saino Mfg. Co., Inc., F. L., Memphis, Tenn.
Syracuse Fire Door Corp., Syracuse, N. Y.
Western Wire & Iron Works, Inc., Chicago, Ill.
Willis Steel Corporation, Galesburg, Ill.

DRAFT GAGES

See Gages, Draft

DRAFT REGULATORS

See Regulators, Furnace Draft, Mechanical

DRILLS, ELECTRIC, PORTABLE

●Black & Decker Mfg. Co., Towson, Md.
Buckeye Portable Tool Co., Dayton, Ohio.
Chicago Pneumatic Tool Co., New York City.
Cincinnati Electrical Tool Co., Cincinnati, O.
Clark, Jr., Electric Co., Jas., Louisville, Ky.
Duro Metal Products Co., Chicago.
Independent Pneumatic Tool Co., Chicago, Ill.
Keller, Inc., Wm. H., Grand Haven, Mich. (Pneumatic)
Mall Tool Co., Chicago, Ill.
Millers Falls Co., Greenfield, Mass.
Misener Mfg. Co., Inc., Syracuse, N. Y.
Paramount Products Co., New York City.
Power King Tool Corp., Warsaw, Ind.
Signal Electric Mfg. Co., Menominee, Mich.
●Skilsaw, Inc., Chicago.
Snap-On Tools Corp., Kenosha, Wis.
Speedway Mfg. Co., Cicero, Ill.
●Stanley Electric Tool Div., The Stanley Works, New Britain, Conn.
Syntron Co., Homer City, Pa.
United States Electrical Tool Co., Cincinnati, O.
Van Dorn Electric Tool Co., Towson, Md.
Willy's Carbide Tool Company, Detroit.
●Wodack Electric Tool Corp., Chicago, Ill. (Combination hammer and drill)

DRIVES, STOKER

Butler Street Foundry & Iron Co., Chicago.
Davy Fuel & Supply Co., Stoker Div., Detroit.
Malco Gear Co., Dolton, Ill.
Merkle-Korff Gear Co., Chicago.
Perkins Machine Gear Co., Springfield, Mass.
Stokerunit Corp., Milwaukee.

DUCT CONNECTIONS

See Connections, Duct, Flexible

DUCT INSULATION

See Insulation, Duct

DUCT TURNING VANES

See Vanes, Duct Turning

DUCTS AND DUCT FITTINGS, PREFABRICATED

Acer & Whedon, Inc., Medina, N. Y.
Acme Tin Plate and Roofing Supply Co., Philadelphia, Pa.
Adelta Manufacturing Co., Philadelphia.
Carey Co., Philip, Lockland, Ohio. (Asbestos)
Champion Furnace Pipe Co., Peoria, Ill.
Chandler Co., Cedar Rapids, Ia.
Char-Gale Mfg. Co., Minneapolis, Minn.
Chicago Furnace Supply Co., Chicago.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Corbman Bros., Inc., Philadelphia, Pa.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Gehri Company, Tacoma, Wash.
Gray Metal Products, Inc., Rochester, N. Y.
●Henry Furnace & Foundry Co., Cleveland, O.
Howes-Woods Co., Cambridge, Mass.
International Heater Co., Utica, N. Y.
Jacobs Co., B. & J., Cincinnati.
Lamneck Products, Inc., Middletown, Ohio.
●Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Wis.
Moncrief Furnace Co., Atlanta, Ga.
●Mueller Furnace Co., L. J., Milwaukee.
Richmond Radiator Co., Inc., Uniontown, Pa.
Season-Aire Corporation of America, Detroit.
Standard Furnace & Supply Co., Omaha, Nebr.
●United States Register Co., Battle Creek, Mich.
Waterman-Waterbury Co., Minneapolis.
Williamson Heater Co., Cincinnati, O.
●Wood Industries, Inc., Gar, Detroit.

DUCTS, PREFABRICATED, NOT METAL

Airtemp Division, Chrysler Corporation, Dayton, Ohio.
Detroit Gasket & Mfg. Co., Detroit.
Smith-Raymond Co., Columbus, Ga.

DUST COLLECTORS

See Collectors, Dust

EAVES TROUGH FITTINGS AND ACCESSORIES

See Fittings and Accessories, Eaves Trough and Gutter

EAVES TROUGH AND GUTTERS

●American Rolling Mill Co., Middletown, Ohio (Stainless)
American Sheet Metal Works, New Orleans, La.
Ames Co., W. R., San Francisco, Cal.
Anderson Mfg. Co., Des Moines, Ia.
Barnes Metal Products Co., Chicago, Ill.
Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.
●Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Div. of Republic Steel Corp., Canton, O.
Biersach & Niedermeyer Company, Milwaukee.
Braden Mfg. Co., Terre Haute, Ind.
Bridesburg Foundry Co., Philadelphia, Pa.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Downs-Smith Brass & Copper Co., New York City.
Edwards Mfg. Co., Inc., Cincinnati, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Herbert & Sons, T. L., Nashville, Tenn.
●Hussey & Co., C. G., Pittsburgh, Pa.
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamb & Ritchie Co., Cambridge, Mass.
Ledkote Products Co., Long Island City, N. Y.
Lyman Co., H. B., Southampton, Mass.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis. (Square Hanging)
●Miller & Doing, Inc., Brooklyn, N. Y.
New Delphos Manufacturing Co., Delphos, Ohio.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Northern Furnace & Supply Company, Billings, Mont.
●Osborn Co., J. M. & L. A., Cleveland, O.
Pittsburgh Plate Glass Co., Pittsburgh.
Reeves Steel & Mfg. Co., Dover, O.
Riggin Metal Products, Inc., Kankakee, Ill.
Ryniker Sheet Metal Works, Inc., Billings, Mont.
St. Paul Corrugating Co., St. Paul, Minn.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Sheet Metal Products Co., Peoria, Ill.
Southern States Iron Roofing Co., Savannah, Ga.
Standard Furnace & Supply Company, Omaha, Nebr.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Van Noorden Co., E., Boston, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco.
Woolwine Metal Products Co., Los Angeles, Cal.
York Corrugating Co., York, Pa.

ELBOW MACHINES

See Machines, Elbow

ELBOWS, BLOW PIPE

See Fittings, Blow Pipe

ELBOWS, CONDUCTOR

See Fittings and Accessories, Conductor

ELBOWS, FURNACE PIPE

See Fittings and Accessories, Furnace Pipe

ELECTRIC WELDERS

See Welders, Arc, Spot

ELECTRODES, ARC WELDING

Air Reduction Sales Company, New York City.
Allegheny Ludlum Steel Corp., Pittsburgh.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Aluminum Company of America, Pittsburgh.
American Agile Corporation, Cleveland.
●American Brass Co., Waterbury, Conn.
American Steel & Wire Co., Cleveland.
Arcos Corporation, Philadelphia.
Atlantic Steel Co., Atlanta, Ga.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Ergolyte Manufacturing Company, Philadelphia.
Electric Arc, Inc., Newark, N. J.
Eutectic Welding Alloys Company, New York City.
General Electric Co., Schenectady, N. Y.
Harnischfeger Corp., Milwaukee.
Hobart Brothers Company, Troy, Ohio.
Laclede Steel Co., St. Louis.
Lincoln Electric Co., Cleveland, O.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Maurath, Inc., Cleveland, O.
McKay Co., York, Pa.
Metal & Thermit Corp., New York City.
National Cylinder Gas Co., Chicago.
Page Steel & Wire Div., of American Chain & Cable Co., Inc., Monessen, Pa.
Revere Copper and Brass Incorporated, New York City.
Seneca Wire & Mfg. Co., Fostoria, O.
Torchweld Equipment Div., National Cylinder Gas Co., Chicago, Ill.
Una Welding, Inc., Cleveland.
●Universal Power Corporation, Cleveland.
Welding Apparatus Company, Chicago.
Westinghouse Electric & Mfg. Co., East Pittsburgh.
Wilson Welder & Metals Co., Inc., New York City.

ENAMELS & LACQUERS

Acme White Lead & Color Works, Detroit.
Acorn Refining Company, Cleveland.
American-Marietta Company, Chicago.
Baer Brothers, New York City.
Debevoise Co., Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
Dragert Company, C. H., Inc., Brooklyn, N. Y.
duPont de Nemours & Co., E. I., Wilmington, Del.
Fales Chemical Co., New York City.
Ferro Enamel Corporation, Cleveland.
Glidden Co., The, Cleveland.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Inter-Coastal Paint Co., East St. Louis, Ill.
Krehbiel Co., J. H., Chicago.
Maas & Waldstein Co., Newark, N. J.
O'Brien Varnish Co., South Bend, Ind.
Quigley Company, Inc., New York City.
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sanvin Chemical Products Co., Moline, Ill.
Sherwin-Williams Co., Cleveland.
Sonneborn Sons, Inc., L., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland. (Enamel).
U. S. Gutta Percha Paint Co., Providence, R. I.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Wattenamel Company, Summit, Illinois.
Wilhelm Co., A., Reading, Pa.
Zapon Division Atlas Powder Co., North Chicago, Ill.

EXHAUSTERS, WELDING FUME

Belanger Fan & Blower Company, Detroit.
Chelsea Fan & Blower Co., Irvington, N. J.
Chicago Pneumatic Tool Co., New York City.
Coppus Engineering Corp., Worcester, Mass.
Faraday Engineering Co., Boston, Mass.
Ruemelin Mfg. Co., Milwaukee, Wis.
Sawyer Electrical Mfg. Co., Los Angeles, Cal.

EXPANSION BOLTS

See Bolts, Expansion

FACES, COLD AIR, WOOD

American Wood Register Co., Plymouth, Ind.
Antigo Bldg. Supply Co., Antigo, Wis.
●Auer Register Co., Cleveland, Ohio.
Eaglesfield Ventilator Co., Indianapolis, Ind.
Garber Lumber & Construction Co., Strasburgh, O.
Lockjoint Wood Products Co., Wichita, Kans.
Marsh Lumber Co., Inc., Dover, O.
McClure Builders' Supply Co., E. Palestine, O.
●United States Register Co., Battle Creek, Mich.
Wooster Art Wood, Inc., Wooster, O.

FAN—FILTER UNITS, PROPELLER

(Separate conversion unit for warm air furnaces)

Air Controls, Inc., Cleveland, O.
●Henry Furnace & Foundry Co., Cleveland, O.
Peerless Electric Co., Warren, O.
Utility Fan Corporation, Los Angeles.
Wayne Automatic Relay Co., Fort Wayne, Ind.

FAN HOUSINGS

See Housings, Fan

FANS, BOOSTER, COLD AIR RETURN

A-C Mfg. Co., Pontiac, Ill.
Advance Aluminum Castings Corp., Chicago, Ill.
Aire-Foile Fan & Blower Company, Detroit, Mich.
Brumme Mfg. Co., Bloomington, Ill.
Cary Mfg. Co., Waupaca, Wis.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Economy Electric Mfg. Co., Cicero, Ill.
General Blower Co., Inc., Philadelphia.
International Engineering, Inc., Dayton, O.
Mauer Engineering, Evanston, Ill.
Peerless Electric Co., Warren, O.
Propellair, Inc., Springfield, O.
Roan Mfg. Co., Racine, Wis.
Semco Mfg. Co., Nashville, Tenn.
Universal Blower Co., Birmingham, Mich.
Utility Fan Corporation, Los Angeles, Cal.

FANS, BOOSTER, ONE-PIPE WARM AIR

Advance Aluminum Castings Corp., Chicago.
Aire-Foile Fan & Blower Co., Detroit, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
Brumme Mfg. Co., Bloomington, Ill.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Dual-Air Fan Corporation, Chicago.
Economy Electric Mfg. Co., Cicero, Ill.
Mauer Engineering, Evanston, Ill.
Midwestern Supply Co., Chicago.
●Mueller Furnace Co., L. J., Milwaukee.
Universal Blower Co., Birmingham, Mich.
Victor Electric Products, Inc., Cincinnati, O.

FANS, FURNACE, PROPELLER TYPE

(Complete with mounting for installation in cold air return)

●Air Controls, Inc., Cleveland, O.
Belanger Fan & Blower Co., Detroit.
Dual-Air Fan Corporation, Chicago.
Economy Electric Manufacturing Co., Cicero, Ill.
General Aire Company, Philadelphia.
●Henry Furnace & Foundry Co., Cleveland, O.
International Engineering, Inc., Dayton, O.
Johnston Co., Wm. W., Dayton, Ohio.
Meier Electric & Machine Co., Indianapolis, Ind.
Peerless Electric Co., Warren, O.
Propellair, Inc., Springfield, O.
Semco Mfg. Co., Nashville, Tenn.
Utility Fan Corporation, Los Angeles.

FANS, KITCHEN EXHAUST

Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Air-O-Line Co., Dallas, Texas.
●Airtherm Mfg. Co., St. Louis.
●Allen Corp., Detroit, Mich.
American Blower Corp., Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
Arex Co., Chicago, Ill.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Barrett Engineers, Cleveland Heights, O.
Belanger Fan & Blower Co., Detroit.
Berns Specialty Co., Chicago, Ill.
Bishop & Babcock Mfg. Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Circulators and Devices Mfg. Corp., New York City.
●Clarage Fan Co., Kalamazoo, Mich.
Dallas Engineering Co., Inc., Dallas, Tex.
Diehl Mfg. Co., Elizabethport, N. J.
Dual-Air Fan Corporation, Chicago.
Economy Electric Mfg. Co., Cicero, Ill.
Electrovent Corp., Detroit, Mich.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Emerson Electric Mfg. Co., St. Louis, Mo.
Garden City Fan Co., Chicago, Ill.
General Aire Company, Philadelphia.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.

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King Ventilating Co., Owatonna, Minn.
Lohman, Inc., Wm. J., Irvington, N. J.
Marathon Electric Mfg. Corp., Wausau, Wis.
Meyer Manufacturing Co., Detroit.
Myers Electric Co., Pittsburgh, Pa.
New York Blower Co., Chicago, Ill.
Peerless Electric Co., Warren, O.
Propellair, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Reynolds Electric Company, Chicago.
Roan Mfg. Co., Racine, Wis.
Roto-Beam Div., Peerless of America, Inc., Chicago.
Semco Mfg. Co., Nashville, Tenn.
Shreveport Engineering Co., Inc., Shreveport, La.
Signal Electric Mfg. Co., Menominee, Mich.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Smith Manufacturing Company, Inc., F. A., Rochester, N. Y.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Universal Blower Co., Birmingham, Mich.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Victor Electric Products, Inc., Cincinnati, O.
●Wagner Electric Corp., St. Louis, Mo.
Ward Mfg. Co., Plymouth, Mich.
Western Blower Co., Seattle, Wash.

FANS, NIGHT AIR COOLING, COMPLETE UNIT

Air Controls, Inc., Cleveland, O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Air-O-Line Co., Dallas, Tex.
Alco Manufacturing Co., Houston, Tex.
●Allen Corporation, Detroit, Mich.
American Blower Corp., Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
Associated Southern Industries, Memphis, Tenn.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Barrett Engineers, Cleveland Heights, O.
Belanger Fan & Blower Co., Detroit, Mich.
Belco Exhaust Fan Mfg. Co., St. Louis.
Bryant Heater Co., Cleveland.
Buffalo Forge Co., Buffalo, N. Y.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Circulators & Devices Mfg. Corp., New York City.
Dallas Engineering Co., Inc., Dallas, Tex.
Diehl Mfg. Co., Elizabethport, N. J.
Dual-Air Fan Corporation, Chicago.
Earl Company, Warren, Houston, Tex.
Economy Electric Mfg. Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fresh'nd-Aire Co., Chicago.
General Aire Company, Philadelphia.
General Blower Co., Inc., Philadelphia, Pa.
Hall Manufacturing Co., Cedar Rapids, Iowa.
Hartzell Propeller Fan Co., Piqua, O.
Herbert & Son, T. L., Nashville, Tenn.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Hunter Fan & Ventilating Co., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Jaden Manufacturing Co., F., Hastings, Nebr.
Jamieson Mfg. Co., Dallas, Tex.
Johnson Fan & Blower Corp., Chicago, Ill.
Jordan & Co., Paul R., Indianapolis, Ind.
Kelley Mfg. Co., Houston, Tex.
King Ventilating Co., Owatonna, Minn.
Lau Blower Co., Dayton, O.
Lohman, Inc., William J., Irvington, N. J.
Marathon Electric Mfg. Corp., Wausau, Wis.
Meier Electric & Machine Co., Indianapolis, Ind.
Murray Co., Dallas, Tex.
New York Blower Co., Chicago, Ill.
Palmer Manufacturing Corp., Phoeniz, Ariz.
Peerless Electric Co., Warren, O.
Propellair, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Reynolds Electric Co., Chicago.
Roto-Beam Div., Peerless of America, Chicago.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Shreveport Engineering Co., Inc., Shreveport, La.
Skinner Heating & Ventilating Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
South Bend Air Products, Inc., South Bend, Ind.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Universal Blower Co., Birmingham, Mich.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
U. S. Machine Corporation, Lebanon, Ind.
Victor Electric Products, Inc., Cincinnati, O.
Viking Air Conditioning Corp., Cleveland, O.
Vulcan Metal Products Co., Birmingham, Ala.
●Wagner Electric Corp., St. Louis, Mo.
Ward Co., Edgar T., River Forest, Ill.
Western Blower Co., Seattle, Wash.
Wind-Way Fan & Ventilating Co., Inc., New Orleans.
●Wood Industries, Inc., Gar, Detroit, Mich.

FANS, VENTILATING, PROPELLER TYPE

(Capacity 4,000 c.f.m. up)

Aerovent Fan Co., Piqua, O.
Air Controls Inc., Cleveland, O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Air-O-Line Co., Dallas, Tex.
●Airtherm Manufacturing Co., St. Louis, Mo.
Alco Manufacturing Co., Houston, Tex.
●Allen Corp., Detroit, Mich.
American Blower Corp., Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
Arex Co., Chicago, Ill.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Barrett Engineers, Cleveland Heights, O.
●Bayley Blower Co., Milwaukee, Wis.
Belanger Fan & Blower Co., Detroit, Mich.
Belco Exhaust Fan Mfg. Co., St. Louis.
Bishop & Babcock Mfg. Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
C. & H. Air Conditioning Fan Co., Inc., Atlanta, Ga.
Campbell Heating Company, E. K., Kansas City, Mo.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Circulators & Devices Mfg. Corp., New York City.
●Clarage Fan Co., Kalamazoo, Mich.
Dallas Eng. Co., Inc., Dallas, Tex.
De Bothezat Ventilating Equipment Division, American Machine & Metals, Inc., East Moline, Ill.
Diehl Mfg. Co., Elizabethport, N. J.
Dual-Air Fan Corporation, Chicago.
Duriron Co., Inc., Dayton, O. (Acid Resisting).
Earl Company, Warren, Houston, Tex.
Eclipse Air Brush Co., Inc., Newark, N. J.
Economy Electric Mfg. Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fresh'nd-Aire Co., Chicago, Ill.
Garden City Fan Co., Chicago, Ill.
General Aire Company, Philadelphia.
●General Blower Co., Chicago.
General Electric Co., Bloomfield, N. J.
Grand Rapids Blow Pipe and Dust Arrester Co., Grand Rapids, Mich.
Guth Company, Edwin F., St. Louis.
Hall Mfg. Co., Cedar Rapids, Ia.
Hartzell Propeller Fan Co., Piqua, O.
Herbert & Sons, T. L., Nashville, Tenn.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Hunter Fan & Ventilating Co., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Johnson Fan & Blower Corp., Chicago, Ill.
Johnston & Co., Wm. W., Dayton, O.
Jordan & Co., Paul R., Indianapolis, Ind.
Kelley Manufacturing Co., Houston, Texas.
King Ventilating Co., Owatonna, Minn.
Lau Blower Co., Dayton, O.
Lohman, Inc., Wm. J., Irvington, N. J.
Marathon Electric Mfg. Corp., Wausau, Wis.
McCord Radiator & Mfg. Co., Detroit.
Meier Electric & Machine Co., Indianapolis, Ind.
Mountain States Equipment Co., Denver, Colo.
Myers Electric Co., Pittsburgh, Pa.
New York Blower Co., Chicago, Ill.
Palmer Manufacturing Corp., Phoenix, Ariz.
Peerless Electric Co., Warren, O.
Perkins & Son, Inc., B. F., Holyoke, Mass.
Phelps Mfg. Co., Little Rock, Ark.
Propellair, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Reynolds Electric Company, Chicago.
Roto-Beam Div., Peerless of America, Inc., Chicago.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Semco Mfg. Co., Nashville, Tenn.
Shreveport Engineering Co., Inc., Shreveport, La.
Signal Electric Mfg. Co., Menominee, Mich.
Skinner Heating & Ventilating Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
South Bend Air Products, Inc., South Bend, Ind.
Spartan Electric Company, Rochester, N. Y.
Steamaire Co., Cincinnati, Ohio.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Trane Company, LaCrosse, Wis.
Trufio Fan Co., Harmony, Pa.
U. S. Air Conditioning Corp., Minneapolis, Minn.
U. S. Machine Corporation, Lebanon, Ind.
Utility Fan Corporation, Los Angeles, Cal.
Viking Air Conditioning Corp., Cleveland, O.
Ward Co., Inc., Edgar T., River Forest, Ill.
Ward Mfg. Co., Plymouth, Mich.
Western Blower Co., Seattle, Wash.
Western Engineering & Mfg. Co., Los Angeles, Cal.
Wind-Way Fan & Ventilator Co., Inc., New Orleans.
Wing Mfg. Co., L. J., New York City.

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FANS, WINDOW VENTILATING

Air Controls, Inc., Cleveland.
Airgard Manufacturing Co., Chicago.
Airmaster Corp., Chicago.
Alco Manufacturing Co., Houston, Tex.
American Blower Corporation, Detroit.
American Coolair Corp., Jacksonville, Fla.
American Metal Products Co., Fort Worth, Tex.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
●Claraga Fan Co., Kalamazoo, Mich.
Dallas Engineering Co., Inc., Dallas, Tex.
Diehl Mfg. Company, Elizabethport, N. J.
Dual-Air Fan Corporation, Chicago.
Earl Company, Warren, Houston, Tex.
Fresh'nd-Aire Company, Chicago.
General Aire Company, Philadelphia.
General Blower Company, Inc., Philadelphia.
Hall Manufacturing Co., Cedar Rapids, Iowa.
Lau Blower Co., Dayton, Ohio.
Lohman, Inc., Wm. J., Irvington, N. J.
Meier Electric and Machine Co., Indianapolis, Ind.
National Engineering & Manufacturing Co., Kansas City, Mo.
Peerless Electric Co., Warren, Ohio.
Reed Unit-Fans, Inc., New Orleans, La.
Roto-Beam Div., Peerless of America, Inc., Chicago.
●Schwitzer-Cummins Company, Indianapolis, Ind.
Semco Mfg. Co., Nashville, Tenn.
Shreveport Engineering Co., Inc., Shreveport, La.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Utility Fan Corporation, Los Angeles.
Victor Electric Products, Inc., Cincinnati, Ohio.
Viking Air Conditioning Corporation, Cleveland.
●Wagner Electric Corporation, St. Louis.
Ward Co., Inc., Edgar T., River Forest, Ill.
Ward Mfg. Co., Plymouth, Mich.
Wind-Way Fan & Ventilator Co., Inc., New Orleans.

FASTENINGS, SPRING STEEL

Shakeproof, Inc., Chicago.
Tinnerman Products, Inc., Cleveland.

FILTERS, AIR, AUTOMATIC

Air Stream Filter Corp., St. Louis.
Air & Refrigeration Corp., New York City.
●American Air Filter Co., Inc., Louisville, Ky.
●Brauer Supply Co., A. G., St. Louis.
Staynew Filter Corp., Rochester, N. Y.
Westinghouse Electric & Mfg. Co., Cleveland. (Electrostatic Precipitator)

FILTERS, AIR, UNIT, CLEANABLE

Air Filter Engineering Co., Chicago. (Galvanized Wire Cloth)
Air Maze Corp., Cleveland, O. (Metal-Wire Baffles)
Air Stream Filter Corp., St. Louis.
●American Air Filter Co., Inc., Louisville, Ky. (Steel wool).
Amirton Co., Inc., 27 Pearl St., New York City.
Annis Air Filters, Glendale, Cal.
Badger Mfg. & Sales Co., Milwaukee. (Steel Wool)
●Brauer Supply Co., A. G., St. Louis.
Chicago Filter Co., Joliet, Ill.
Coppus Engineering Corp., Worcester, Mass. (Felt)
Davies Air Filter Corp., New York, N. Y.
Detroit Lubricator Co., Detroit. (Fibre)
Hugo Mfg. Co., West Duluth, Minn.
Kauffman Air Conditioning Corp., St. Louis.
Kleenaire Corp., Stevens Point, Wis.
Somers, Inc., H. J., Detroit, Mich. (Hair, Glass)
Staynew Filter Corp., Rochester, N. Y. (Feltex, Glastex, heat resistant cotton)
Supreme Air Filter Co., New York City.
Tuttle Air Filter Co., Inc., Louisille, Ky. (Split wire fiber)
Universal Air Filter Corp., Duluth, Minn. (Cellulose)

FILTERS, AIR, UNIT, THROWAWAY

●American Air Filter Co., Inc., Louisville, Ky.
Amirton Co., Inc., 27 Pearl St., New York City.
Anderson Products, Inc., Cambridge, Mass.
Badger Mfg. & Sales Company, Milwaukee. (Paper)
●Blocksom & Company, Michigan City, Ind. (Flame proof curled fibre and hair)
Chicago Filter Co., Joliet, Ill.
Davies Air Filter Corp., New York City.
Detroit Lubricator Co., Detroit. (Fibre)
Gehri Company, Tacoma, Wash. (Viscous)
Kleenaire Corp., Stevens Point, Wis.
●Owens-Corning Fiberglas Corp., Toledo, O. (Fiberglas)
Plymouth Cordage Co., N. Plymouth, Mass. (Anderson Products, Inc., Cambridge, Mass., National Sales Agents)
●Research Products Corp., Madison, Wis. (Expanded flameproofed kraft fibre)
Staynew Filter Corp., Rochester, N. Y. (Feltex, Glastex and heat resistant cotton)
Universal Air Filter Corp., Duluth, Minn. (Cellulose)
Wilson & Co., Inc., Chicago, Ill.
Zim Filter Co., Hammond, Ind.
Zimmerman, R. F., Cincinnati, Ohio. (Gravity Cold Air)

FIRE BRICK

See Refractories

FIREPOTS

See Repairs, Stove and Furnace

FIRING TOOLS

See Tools, Firing

FITTINGS AND ACCESSORIES, CONDUCTOR

(Elbows, Heads, Hooks, Shoes, Straps, etc.)

Allred Manufacturing Co., Inc., Indianapolis, Ind.
Ames Co., W. R., San Francisco.
Barnes Metal Products Co., Chicago, Ill.
●Berger Bros. Co., Philadelphia, Pa.
Berger Mfg., Div. of Republic Steel Corp., Canton, O.
Boyd & Co., Inc., Charles P., Philadelphia.
Braden Mfg. Co., Terre Haute, Ind.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Crary Mfg. Co., Middleport, O. (Cut-off.)
Dieckmann Co., Ferdinand, Cincinnati, O.
Downs-Smith Brass & Copper Co., New York City.
Edwards Mfg. Co., Inc., Cincinnati, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Gray Metal Products, Inc., Rochester, N. Y.
●Hussey & Co., C. G., Pittsburgh, Pa.
Iwan Bros., South Bend, Ind.
Jeliff Mfg. Corp., C. O., Southport, Conn.
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamb & Ritchie Co., Cambridge, Mass.
Levow, David, New York City.
Lyon, Conklin & Co., Inc., Baltimore.
Martin Metal Mfg. Co., Wichita, Kan.
Maysteel Products, Inc., Mayville, Wis.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
●Osborn Co. J. M. & L. A., Cleveland, O.
Rival Strap Corp., New York City. (Ornamental Conductor Straps)
Royal-Apex Mfg. Corp., Brooklyn, N. Y.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Sheet Metal Products Co., Peoria, Ill.
Stewart Foundry, O. S., Cleveland, O. (Iron Conductor Shoes)
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
●United States Register Co., Battle Creek, Mich.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco.
Woolwine Metal Products Co., Los Angeles, Cal.

FITTINGS AND ACCESSORIES, EAVES TROUGH AND GUTTER

(Hangers, Strainers, Miters, Ends, Thimbles, etc.)

Abbott Mfg. Co., Painesville, O. (Hangers)
Ames Co., W. R., San Francisco.
Audubon Wire Cloth Corp., Philadelphia. (Strainers)
Barnes Metal Products Co., Chicago, Ill.
●Berger Bros. Co., Philadelphia, Pa.
Berger Mfg., Div. of Republic Steel Corp., Canton, O.
Bertram Mfg. Co., Chicago, Ill.
Boyd & Co., Inc., Charles P., Philadelphia.
Braden Mfg. Co., Terre Haute, Ind.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Downs-Smith Brass & Copper Co., New York City.
Eav-Tex Company, Upper Darby, Pa. (Roof Gutter Protection)
Edwards Mfg. Co., Inc., Cincinnati, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Grand Rapids Wire Products Co., Grand Rapids, Mich.
Gray Metal Products, Inc., Rochester, N. Y.
Herbert & Sons, T. L., Nashville, Tenn.
●Hussey & Co., C. G., Pittsburgh, Pa. (Copper)
Iwan Brothers, South Bend, Ind.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y.
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamb & Ritchie Co., Cambridge, Mass.
Ledkote Products Co., Long Island City, N. Y.
Levow, David, New York City.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.

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New Way Products Company, Toledo. (Eaves Trough Shield)
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Ohio Wire Products Co., Dover, O. (Hangers)
●Osborn Co., J. M. & L. A., Cleveland, O.
Reeves Steel & Mfg. Co., Dover, O.
Royal-Apex Mfg. Corp., Brooklyn, N. Y.
St. Paul Corrugating Co., St. Paul, Minn.
Schoedinger, F. O., Columbus, Ohio.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Sheet Metal Products Co., Peoria, Ill.
Snap-On Mfg. Co., Chicago, Ill. (Hangers)
Southern States Iron Roofing Co., Savannah, Ga.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
U. S. Cistern Filter Mfg. Co., Bloomington, Ill.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco.
Woolwine Metal Products Co., Los Angeles, Cal.

FITTINGS AND ACCESSORIES, FURNACE PIPE

(Angles, Boots, Elbows, Heads, Joints, Offsets, Tees, etc.)

Acer & Whedon, Inc., Medina, N. Y.
Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
Adelta Manufacturing Co., Philadelphia.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Company, Columbus, Ohio.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Bergstrom Mfg. Corp., Neenah, Wis.
Braden Mfg. Co., Terre Haute, Ind.
Campbell Heating Co., Des Moines, Ia.
Cary Mfg. Co., Waupaca, Wis.
Champion Furnace Pipe Co., Peoria, Ill.
Char-Gale Mfg. Co., Minneapolis.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Cincinnati Stamping Co., Cincinnati, O.
Corbman Bros., Inc., Philadelphia, Pa.
Detroit Safety Furnace Pipe Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Farquhar Furnace Co., Wilmington, O.
Fraser and Johnston Co., San Francisco.
Gray Metal Products, Inc., Rochester, N. Y.
Green Colonial Furnace Co., Des Moines, Ia.
●Henry Furnace & Foundry Co., Cleveland, O.
Herbert & Sons, T. L., Nashville, Tenn.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Howe & Bassett Co., Inc., Rochester, N. Y. (Boots)
●Howes-Woods Company, Cambridge, Mass.
International Heater Co., Utica, N. Y.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y.
Keith Furnace Company, Des Moines, Iowa.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis. (Elbows and pipe only.)
Lamneck Products, Inc., Middletown, Ohio.
Lennox Furnace Co., Marshalltown, Ia.
Lyman Co., H. B., Southampton, Mass.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Majestic Co., Huntington, Ind.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
Martin Metal Mfg. Co., Wichita, Kan.
●Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Wis.
Monarch Furnace Fittings Manufacturers, Chicago, Ill.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Osborn Co., J. M. & L. A., Cleveland, O.
Pacific Airmax Corporation, Huntington Park, Calif.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
●Peerless Foundry Co., Indianapolis, Ind.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Company, Dowagiac, Mich.
Reeves Steel & Mfg. Co., Dover, O.
Roberts-Hamilton Co., Minneapolis, Minn.
●Rock Island Register Co., Rock Island, Ill.
Schecter Brothers Co., Philadelphia, Pa.
Schoedinger, F. O., Columbus, Ohio.
Sheet Metal Specialty Co., Pittsburgh, Pa.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Standard Furnace & Supply Co., Omaha, Nebr.
Stratton & Terstegge Co., Louisville, Ky.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
●United States Register Co., Battle Creek, Mich.
Waterman-Waterbury Co., Minneapolis.
Waverly Heating Supply Co., Boston.
Wheeling Corrugating Co., Wheeling, W. Va.
Williamson Heater Co., Cincinnati, O.

FITTINGS AND ACCESSORIES, SMOKE PIPE

(Draw-bands, Clean-outs, Collars, Tees, etc.)

Acer & Whedon, Inc., Medina, N. Y.
Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Company, Columbus, Ohio.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Bardes Range & Foundry Co., E. H., Cincinnati, O.
Bergstrom Mfg. Corp., Neenah, Wis.
Bieler & Son, Inc., L., Long Island City, N. Y.
Braden Mfg. Co., Terre Haute, Ind.
●Brauer Supply Co., A. G., St. Louis, Mo.
Cary Mfg. Co., Waupaca, Wis.
Champion Furnace Pipe Co., Peoria, Ill.
Char-Gale Mfg. Co., Minneapolis.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Cincinnati Stamping Co., Cincinnati, O.
Corbman Bros., Inc., Philadelphia.
Detroit Safety Furnace Pipe Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Green Colonial Furnace Co., Des Moines, Ia.
●Henry Furnace & Foundry Co., Cleveland, O.
Herbert & Sons, T. L., Nashville, Tenn.
Homer Furnace & Foundry Corporation, Coldwater, Mich.
Howes-Woods Company, Cambridge, Mass.
International Heater Co., Utica, N. Y.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y.
Keith Furnace Company, Des Moines, Ia.
Kirk & Blum Mfg. Co., Cincinnati, Ohio.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamneck Products, Inc., Columbus, Ohio.
Lennox Furnace Co., Marshalltown, Ia.
Lyman Co., H. B., Southampton, Mass.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Majestic Co., Huntington, Ind.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
Martin Metal Co., Wichita, Kan.
●May-Fiebeger Company, Newark, Ohio.
Milcor Steel Co., Milwaukee, Wis.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Osborn Co., J. M. & L. A., Cleveland, O.
Patten Co., J. V., Sycamore, Ill.
Peacard Co., M. A., Boston.
●Peerless Foundry Co., Indianapolis, Ind.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Company, Dowagiac, Mich.
Reeves Steel & Mfg. Co., Dover, O.
Roberts-Hamilton Co., Minneapolis, Minn.
●Rock Island Register Co., Rock Island, Ill.
Schecter Brothers Co., Philadelphia, Pa.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Skinner Heating & Ventilating Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Standard Furnace & Supply Co., Omaha, Nebr.
Stratton & Terstegge Co., Louisville, Ky.
Tierney Rotor Ventilator Co., Minneapolis, Minn.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
●United States Register Co., Battle Creek, Mich.
Waterman-Waterbury Co., Minneapolis.
Waverly Heating Supply Co., Boston.
Wheeling Corrugating Co., Wheeling, W. Va.
Wilder Manufacturing Co., Niles, O.
Williamson Heater Co., Cincinnati, O.

FITTINGS, BLOW PIPE

(Elbows, Flanges, Hangers, Hoods and Sweeps, Joints, Rings, Tubing)

Allington & Curtis Mfg. Co., Saginaw, Mich.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Day Co., Minneapolis, Minn.
Falstrom Co., Passaic, N. J.
Goethel Co., Alfred C., Milwaukee, Wis.
Goethel Sheet Metal Works, Alfred, Milwaukee, Wis.
Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
Kirk & Blum Mfg. Co., Cincinnati, O. (Adjustable Buffing Hoods)
Lee & Son Co., Thomas, Cincinnati, O.
Mahon Co., R. C., Detroit, Mich.
●Meyer & Bro. Co., F., Peoria, Ill.
Puhl & Hepper Mfg. Co., Inc., St. Louis.
Schmieg Sheet Metal Works, Detroit.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
●United States Register Co., Battle Creek, Mich.
Western Blower Co., Seattle, Wash.
Young & Bertke Co., Cincinnati, O.

FITTINGS, HUMIDIFIER, WATER LINE

●American Brass Co., Waterbury, Conn.
Hays Mfg. Co., Erie, Pa.
McDonnell & Miller, Chicago.
Maid-O'-Mist, Inc., Chicago, Ill.

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Monmouth Products Co., Cleveland, O.
Reichert Float & Mfg. Co., Toledo, O.
Rockford Brass Works, Rockford, Ill.
Scovill Mfg. Co., Morency-Van Buren Div., Sturgis, Mich.
Skuttle Manufacturing Co., Detroit.
Streamline Pipe & Fittings Div., Mueller Brass Co., Port Huron, Mich.
Weatherhead Co., Cleveland, O.

FLANGERS

See Machines, Flanging

FLANGES, BLOW PIPE

See Fittings, Blow Pipe

FLASHINGS, ROOF, PATENTED

Alpha Metal & Rolling Mills, Inc., Brooklyn.
•American Rolling Mill Co., Middletown, Ohio. (Galvanized)
Barrett Division, Allied Chemical & Die Corporation, New York City (for brick and concrete)
Berger Mfg. Div. Republic Steel Co., Canton, Ohio.
Biersach & Niedermeyer Co., Milwaukee.
Byers Flashing Sales Division, Chicago.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
•Cheney Metal Products Co., Trenton, N. J.
Chicago Metal Mfg. Co., Chicago, Ill.
Copper Roofs Corporation, Milwaukee.
Cox Roofing Co., Winston-Salem, N. C.
Downs-Smith Brass & Copper Co., New York City.
Eagle-Picher Lead Co., Cincinnati, O.
Edwards Mfg. Co., Inc., Cincinnati, O.
Figge Mfg. Co., Chicago, Ill.
Flemm Lead Company, Inc., Long Island City, N. Y.
•Hussey & Co., C. G., Pittsburgh, Pa.
Majestic Flashing Company, Baltimore.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
National Lead Company, New York City.
New Delphos Manufacturing Co., Delphos, Ohio.
Robertson Co., H. H., Pittsburgh, Pa.
Rochester Lead Works, Inc., Rochester, N. Y.
Roof Specialties Co., Inc., Pittsburgh.
Schoedinger, F. O., Columbus, O.
Simplex Manufacturing Co., Fond du Lac, Wis.
Van Noorden Co., E., Boston, Mass.
Williams-Wallace Co., San Francisco.
York Corrugating Co., York, Pa.

FLASHINGS, THROUGH-WALL, PATENTED

Alpha Metal & Rolling Mills, Inc., Brooklyn.
•American Brass Co., Waterbury, Conn. (Copper)
Biersach & Niedermeyer Company, Milwaukee.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
•Cheney Metal Products Co., Trenton, N. J.
Downs-Smith Brass & Copper Co., Inc., New York City.
Figge Mfg. Co., Chicago.
Majestic Flashing Company, Baltimore.
Nelson Mfg. Co., B. F., Minneapolis (Metal Strip)
New Delphos Manufacturing Co., Delphos, Ohio.
Robertson Co., H. H., Pittsburgh, Pa.
Roof Specialties Co., Inc., Pittsburgh.
ThruBond Flashing Corp., New York City.
Van Noorden Co., E., Boston.

FLASHINGS, WALL, PATENTED

Alpha Metal & Rolling Mills, Inc., Brooklyn.
Biersach & Niedermeyer Company, Milwaukee.
•Cheney Metal Products Co., Trenton, N. J.
Copper Roofs Corporation, Milwaukee.
Figge Mfg. Co., Chicago.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Majestic Flashing Company, Baltimore.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.
Roof Specialties Co., Inc., Pittsburgh.
Schoedinger, F. O., Columbus, O.
ThruBond Flashing Corp., New York City.
Van Noorden Co., E., Boston.
York Corrugating Co., York, Pa.

FLOOR FURNACES

See Furnaces, Warm Air, Floor

FLUE GAS ANALYZERS

See Analyzers, CO_2, Portable

FLUX, SOLDERING

Air Reduction Sales Company, New York City. (Aluminum)
•Allen Co., Inc., L. B., Chicago (Aluminum, Copper, Gal. Iron, Stainless Steel)
American Chemical Paint Co., Ambler, Pa.
American Solder & Flux Co., Philadelphia, Pa.
Bastian-Blessing Co., Chicago.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
•Benson Co., Inc., Alex R., Hudson, N. Y. (Salts, Pastes for Copper, Galvanized, Stainless)
Burnley Battery & Mfg. Co., North East, Pa. (Paste, Salts, Solution) (Copper, Galvanized Iron)
Chase Brass & Copper Co., Incorporated, Waterbury, Conn. (Copper sweat fittings)
Colonial Alloys Company, Philadelphia. (Stainless)
Diener Mfg. Co., Geo. W., Chicago, Ill.
du Pont de Nemours & Co., E. I., Wilmington, Del. (Copper, Galvanized Iron)
Eutectic Welding Alloys Co., New York City (Aluminum, Copper, Galvanized Iron, Stainless)
Garden City Laboratory, Inc., Chicago.
Gardiner Metal Co., Chicago, Ill.
Handy & Harman, New York City. (Copper, galvanized iron, stainless).
Hercules Chemical Co., Inc., New York City.
Imperial Brass Mfg. Co., Chicago, Ill.
Johnson Co., Lloyd S., Chicago. (Aluminum, stainless steel, copper, galvanized iron)
•Johnson Gas Appliance Co., Cedar Rapids, Iowa.
Kester Solder Co., Chicago, Ill. (Viscosiformed Paste, Trichloron Salts, Stainless Steel—Paste and Salts)
Langsenkamp Co., F. H., Indianapolis, Ind. (Stainless Steel)
Linde Air Products Co., New York City. (Aluminum, copper, galv. iron, stainless)
Lukens Metal Co., Thos. F., Philadelphia, Pa. (Copper, Galvanized Iron, Stainless Steel)
Motex Metal Process Corporation, Detroit.
Neilson Chemical Co., Detroit. (For Steel)
•Pfanstiehl Chemical Co., Waukegan, Ill.
Potomac Mfg. Co., Philadelphia, Pa.
Reiner & Campbell Co., Inc., Elizabeth, N. J.
•Ruby Chemical Co., Columbus, O. (Liquid and Paste for copper, galv. iron, stainless).
Torchweld Equipment Div. National Cylinder Gas Co., Chicago, Ill. (Aluminum, copper, galv. iron, stainless)
Woodhill Chemical Co., Cleveland.

FRAMING, FOR HOUSING ASSEMBLIES

Dahlstrom Metallic Door Co., Jamestown, N. Y.
Dry-Zero Corporation, Chicago.

FUEL UNITS FOR OIL BURNERS

See Units, Fuel, for Oil Burners

FURNACE BLOWERS

See Blowers, Furnace, Centrifugal

FURNACE-BURNER UNITS

See Furnaces, Warm Air

FURNACE CEMENT

See Cement, Furnace

FURNACE CLEANERS

See Cleaners, Vacuum, Furnace

FURNACE COVERING

See Insulation, Furnace and Pipe

FURNACE LIGHTERS

See Lighters, Furnace

FURNACE LINING

See Refractories

FURNACE PIPE

See Pipe, Furnace

FURNACE PIPE FITTINGS AND ACCESSORIES

See Fittings and Accessories, Furnace Pipe

FURNACE REGULATORS

See Regulators, Furnace Draft, Mechanical and Motors, Damper, Furnace Draft, Electrical

FURNACE REPAIRS

See Repairs, Stove and Furnace

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FURNACES, CHIMNEY

Round Oak Co., Dowagiac, Mich.

FURNACES FOR DORMITORIES

(800,000 Btu and up)

●Mueller Furnace Company, L. J., Milwaukee, Wis.

FURNACES, SOLDERING

Aeroil Burner Co., Inc., West New York, N. J.
Berns Co., Inc., Otto, Rochester, N. Y.
Burgess Soldering Furnace Co., Columbus, O. (Gasoline)
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., Geo. W., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Floral City Company, Monroe, Mich.
Hones, Inc., Charles A., Baldwin, N. Y.
Insto-Gas Corporation, Detroit.
●Johnson Gas Appliance Co., Cedar Rapids, Ia.
Lenk Mfg. Company, Newton Lower Falls, Mass.
Liquefied Gas Appliance Co., Mars, Pa.
National Machine Works, Chicago.
●Peck, Stow & Wilcox Co., Southington, Conn.
Reiner & Campbell Co., Inc., Elizabeth, N. J.
Reliable Gas Products Co., Cedar Rapids, Ia.
Turner Brass Works, Sycamore, Ill.
●Unique Manufacturing Co., Inc., Chicago (Gasoline).
Van Praag Sales, New York City.
Vulcan Electric Co., Danvers, Mass.
Wall Mfg. Supply Co., P., N. S. Pittsburgh.
Ward Machinery Co., Chicago. (Gas)
Weiss & Co., H., New York City.

FURNACES, WARM AIR, AIR CONDITIONING, COAL, CAST IRON

(Complete matched, hand-fired, furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
Agricola Furnace Co., Inc., Gadsden, Ala.
Airtemp Div. Chrysler Corp., Dayton, Ohio.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andes Range & Furnace Corp. Geneva, N. Y.
Bovee Furnace Works, Waterloo, Ia.
Chandler Co., Cedar Rapids, Ia.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Farris Furnace Company, Springfield, Ill.
Faultless Heater Corp., Cleveland, O.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Company, Div. Liberty Foundry Co., St. Louis, Mo.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hart & Crouse Corp., Utica, N. Y.
●Henry Furnace & Fdy. Co., Cleveland, O.
Hess-Snyder Co., Massillon, O.
Home Furnace Co., Holland, Mich.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co., Detroit, Mich.
Independence Stove & Furnace Co., Independence, Mo.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Inc., Syracuse, N. Y.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
Majestic Co., Huntington, Ind.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
●Mount Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Olsen Mfg. Co., C. A., Elyria, O.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Reynolds Manufacturing Co., Springfield, Mo.
Robinson Furnace Co., Chicago, Ill.
Rock Island Stove Co., Rock Island, Ill.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Foundry & Boiler Company, Sioux City, Ia.
Spear Stove & Heater Co., James, Philadelphia.
Twentieth Century Heating & Ventilating Co., Akron, O.
Western Furnaces, Inc., Tacoma, Wash.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, COAL, STEEL

(Complete matched, hand-fired, furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andrews Heating Co., Minneapolis.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, O.
Beck Engineering Combustion Kompany, St. Louis.
Bovee Furnace Works, Waterloo, Ia.
Campbell Heating Co., Des Moines, Ia.
Campbell Heating Co., E. K., Kansas City, Mo.
Chandler Co., Cedar Rapids, Ia.
Deshler Foundry & Machine Works, Deshler, Ohio.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Farquhar Furnace Co., Wilmington, O.
Faultless Heater Corp., Cleveland.
●Fitzgibbons Boiler Company, Inc., New York City.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Company, Div. Liberty Foundry Co., St. Louis.
Green Colonial Furnace Co., Des Moines, Ia.
Grossenbacher Furnace Co., St. Louis, Mo.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Heatlox Furnaces, Inc., Tacoma, Wash.
●Henry Furnace & Fdy. Co., Cleveland, O.
Hess-Snyder Co., Massillon, O.
Hess Warming & Ventilating Co., Chicago, Ill.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co., Detroit, Mich.
Ingersoll Steel & Disc. Div., Borg-Warner Corp., Chicago.
International Heater Co., Utica, N. Y.
●Jackson & Church Co., Saginaw, Mich.
Joliet Heating Corp., Joliet, Ill.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Inc., Syracuse, N. Y.
Koons Furnace Co., Danville, Ill.
●Leader Iron Works, Inc., Decatur, Ill.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
McPherson Furnace & Supply Co., Portland, Ore. (Also sawdust and wood burning)
Majestic Co., Huntington, Ind.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit, Mich.
ModernAire Co., Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Engineering Co., Detroit, Mich.
Northwest Stove & Furnace Works, Portland, Ore.
●Olsen Mfg. Co., C. A., Elyria, O.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Portland Stove Foundry Co., Portland, Me.
Robinson Furnace Co., Chicago.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Sandberg Co., H. J., Portland, Ore.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Skinner Heating & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Smith Heater Co., Peter, Detroit.
Spencer Heater Division, Williamsport, Pa.
Standard Furnace & Supply Co., Omaha, Nebr.
Sure Comfort Furnace Co., Berwyn, Ill.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Viking Manufacturing Corporation, Dayton, Ohio.
Waterman-Waterbury Co., Minneapolis, Minn.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, FOR ATTIC INSTALLATION, STEEL

American Furnace Co., St. Louis. (Oil or Gas)
Gasconaire, Inc., Detroit (Gas)
Lennox Furnace Co., Marshalltown, Iowa. (Gas)
●Payne Furnace & Supply Co., Beverly Hills, Cal. (Gas)
Stephens Mfg. Co., Tulsa, Okla.
York Ice Machinery Corporation, York, Pa.

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FURNACES, WARM AIR, AIR CONDITIONING, GAS, CAST IRON

(Complete matched, gas-fired, furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
Airtemp Division, Chrysler Corporation, Dayton, O.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Company, St. Louis.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Bastian-Morley Co., Inc., LaPorte, Ind.
Beck Engineering Combustion Kompany, St. Louis.
Bryant Heater Co., Cleveland.
Burke Stoker & Mfg. Co., Chicago.
Coroaire Heater Corporation, Cleveland.
●Forest City Foundries Co., Cleveland, O.
Green Colonial Furnace Co., Des Moines, Ia.
●Henry Furnace & Fdy. Co., Cleveland, O.
Hess-Snyder Co., Massillon, O.
Ideal Furnace Co., Detroit, Mich.
International Heater Co., Utica, N. Y.
Moncrief Furnace & Mfg. Co., Dallas, Tex.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Pacific Airmax Corporation, Huntington Park, Calif.
Pennsylvania Furnace & Iron Co., Warren, Pa.
●Premier Furnace Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
●Schwab Furnace Co., Milwaukee, Wis.
Security Manufacturing Co., Kansas City, Mo.
Sioux City Foundry and Boiler Company, Sioux City, Ia.
Surface Combustion, Toledo, O.
Thatcher Furnace Co., Garwood, N. J.
Twentieth Century Heating & Ventilating Co., Akron, O.
Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y.
Viking Mfg. Corp., Dayton, Ohio.
XXth Century Heating & Ventilating Co., Akron, O.
●Wise Furnace Co., Akron, O.
York Ice Machinery Corp., York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, GAS, STEEL

(Complete matched, gas-fired, furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
Airtemp Div., Chrysler Corp., Dayton, Ohio.
Aladdin Heating Corporation, Oakland, Cal.
Allied Heating & Air Conditioning Co., Lawndale, Cal.
American Furnace Company, St. Louis.
American Radiator and Standard Sanitary Corp., Pittsburgh.
American Standard Gas Products Co., Detroit.
Andrews Heating Company, Minneapolis.
Armstrong Furnace Co., Columbus, O.
Auburn Burner Co., Auburn, Ind.
Bard Mfg. Co., Bryan, O.
Beck Engineering Combustion Kompany, St. Louis.
Bryant Corp., C. L., Cleveland, O.
Burke Stoker & Mfg. Co., Chicago.
Campbell Heating Company, Des Moines, Ia.
Campbell Heating Co., E. K., Kansas City, Mo.
Chandler Company, Cedar Rapids, Ia.
●Conco Corporation, Mendota, Ill.
Dalzen Manufacturing Co., Detroit.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Dornback Furnace & Foundry Co., Cleveland.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
Electrogas Furnace Co., San Francisco, Cal.
●Fitzgibbons Boiler Co., Inc., New York City.
Floral City Company, Monroe, Mich.
●Forest City Foundries Co., Cleveland, O.
Fraser and Johnston Co., San Francisco.
Gasconaire, Inc., Detroit, Mich.
Gaul Air Conditioner Co., Dayton, Ohio.
General Electric Company, Bloomfield, N. J.
General Gas Light Co., Kalamazoo, Mich.
●Gillen Company, J. L., Dowagiac, Mich.
Glasby Manufacturing Co., Inc., J. P., Bloomfield, N. J.
Green Colonial Furnace Co., Des Moines, Ia.
Grossenbacher Furnace Co., St. Louis, Mo.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Heating Equipment Co., San Francisco.
Heatiox Furnaces, Inc., Tacoma, Wash.
Heil Co., The, Milwaukee.
Hess Warming & Ventilating Co., Chicago, Ill.
Holly Heating & Mfg. Co., So. Pasadena, Cal.
Huwer Heating Corp., Detroit.
Ideal Furnace Co., Detroit, Mich.
Independence Stove & Furnace Co., Independence, Mo.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.
●Jackson & Church Co., Saginaw, Mich.
Johnston Gas Furnace Corp., North Hollywood, Cal.
Joliet Heating Corp., Joliet, Ill.
Kaustine Co., Inc., Perry, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kent Co., Inc., J. King, St. Louis.
Koons Furnace Company, Danville, Ill.
Leeson Air Conditioning Corporation, Detroit.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
Majestic Co., Huntington, Ind.
Marion Furnace Co., Detroit.
●May-Fiebeger Co., Newark, O.
●Mayflower Air-Conditioners, Inc., St. Paul.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit, Mich.
Moncrief Furnace & Mfg. Co., Inc., Dallas, Texas.
Morrison Steel Products, Inc., Buffalo, N. Y.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Eng. Co., Detroit, Mich.
New Mission Htg. & Vent. Co., San Francisco, Cal.
Northern Furnace & Supply Co., Billings, Mont.
●Olsen Mfg. Co., C. A., Elyria, O.
Pacific Gas Heating Co., San Francisco.
Pacific Airmax Corporation, Huntington Park, Calif.
Palmer Manufacturing Corp., Phoenix, Ariz.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
Patten Co., J. V., Sycamore, Ill.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Perfection Stove Co., Cleveland, O.
Pernot & Rich, Inc., Los Angeles, Cal.
●Premier Furnace Company, Dowagiac, Mich.
Reif-Rexoil, Inc., Buffalo, N. Y.
Reznor Mfg. Co., Mercer, Pa.
Robinson Furnace Co., Chicago.
Round Oak Co., Dowagiac, Mich.
Royal Air Conditioning Equipment Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
Ryniker Sheet Metal Works, Inc., Billings, Mont.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Scott-Newcomb, Inc., St. Louis, Mo.
Season-Aire Corporation of America, Detroit.
Security Manufacturing Co., Kansas City, Mo.
Standard Furnace & Supply Co., Omaha, Nebr.
Stephens Mfg. Co., Tulsa, Okla.
Twentieth Century Heating & Ventilating Co., Akron, O.
United States Radiator Corp., Detroit, Mich.
Utility Fan Corporation, Los Angeles, Cal. (Butane)
Viking Mfg. Corp., Dayton, Ohio.
Waterman-Waterbury Co., Minneapolis, Minn.
Wayne Oil Burner Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Wheeling Furnace Corporation, Martins Ferry, Ohio.
●Wise Furnace Co., Akron, O.
Williamson Heater Co., Cincinnati, O.
●Wood Industries, Inc., Gar, Detroit.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, AIR CONDITIONING, OIL, CAST IRON

(Complete matched, oil-burning furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia, Pa.
American Foundry & Furnace Co., Bloomington, Ill.
American Radiator & Standard Sanitary Corp., Pittsburgh.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Auto-Heat Corporation, New York City.
Chandler Co., Cedar Rapids, Ia.
Coroaire Heater Corporation, Cleveland.
Excelsior Steel Furnace Co., Chicago.
Hess-Snyder Co., Massillon, Ohio.
Home Furnace Co., Holland, Mich.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Inc., Syracuse, N. Y.
MaGirl Foundry and Furnace Works, P. H., Bloomington, Ill.
●May Oil Burner Corporation, Baltimore.
Montag Stove & Furnace Works, Portland, Ore.
●Mount Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, Ohio.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Foundry & Boiler Co., Sioux City, Ia.
Standard Furnace & Supply Co., Omaha, Nebr.
Westwick & Son, Inc., John, Galena, Ill.
●Wise Furnace Company, Akron, Ohio.

FURNACES, WARM AIR, AIR CONDITIONING, OIL, STEEL

(Complete matched, oil-burning furnace, fan, filter and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
AireOzone Corporation, Cicero, Ill.
Airtemp Division Chrysler Corp., Dayton, Ohio.

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American Air Conditioning Corp., Sebastopol, Cal.
American Furnace Co., St. Louis.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
American Stove Co., Lorain, O.
Anchor Post Fence Co., Heating Div., Baltimore, Md.
Andrews Heating Company, Minneapolis.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, Ohio.
Atlas Heating & Ventilating Co., Ltd., San Francisco.
Auburn Burner Co., Auburn, Ind.
Auburn Foundry, Inc., Stoker Div., Auburn, Ind.
Auto-Heat Corporation, New York City.
Automatic Burner Corporation, Chicago.
Bard Mfg. Co., Bryan, Ohio.
Beck Engineering Combustion Kompany, St. Louis.
Bethlehem Foundry & Machine Co., Bethlehem, Pa.
Bovee Furnace Works, Waterloo, Ia.
Bryant Corp., C. L., Cleveland.
Campbell Heating Co., Des Moines, Ia.
Campbell Heating Co., E. K., Kansas City, Mo.
Cary Manufacturing Co., Waupaca, Wis.
Century Engineering Corporation, Cedar Rapids, Iowa.
Chandler Co., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago.
●Conco Corporation, Mendota, Ill.
Crane Company, Chicago.
Dalzen Manufacturing Co., Detroit.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Deshler Foundry & Machine Works, Deshler, Ohio.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich.
Eastern Oil & Equipment Co., Portland, Me.
Electrol Incorporated, Clifton, N. J.
Evans Corp., George, Moline, Ill.
Excelsior Steel Furnace Co., Chicago.
Farquhar Furnace Co., Wilmington, O.
●Fitzgibbons Boiler Co., Inc., New York City.
Floral City Company, Monroe, Mich.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Div. Liberty Foundry Co., St. Louis.
Gasoroil Mfg. Corp., Genoa City, Wis.
Gehri Co., Tacoma, Wash.
General Electric Co., Bloomfield, N. J.
Gilbert & Barker Mfg. Co., Springfield, Mass.
●Gillen Company, J. L., Dowagiac, Mich.
Glasby Manufacturing Co., Inc., J. P., Bloomfield, N. J.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Harvey-Whipple, Inc., Springfield, Mass.
Heatlox Furnaces, Inc., Tacoma, Wash.
Heil Co., Milwaukee.
●Henry Furnace & Fdy. Co., Cleveland.
Hess-Snyder Co., Massillon, Ohio.
Hess Warming & Ventilating Co., Chicago.
Hipoint Corp., Bellefontaine, O.
Hoffman Specialty Co., Inc., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Hotentot Co., Inc., Omaha, Nebr.
Huwer Heating Corp., Detroit.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.
International Heater Company, Utica, N. Y.
Interstate Metal Products Co., Inc., Chicago.
●Jackson & Church Co., Saginaw, Mich.
Joliet Heating Corp., Joliet, Ill.
Johnson Co., S. T., Oakland, Cal., and Philadelphia.
Kaustine Co., Inc., Perry, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Inc., Syracuse, N. Y.
Kleen-Heet, Inc., Chicago.
Koons Furnace Company, Danville, Ill.
Kruse Company, Indianapolis, Ind.
Laco Oil Burner Co., Griswold, Ia.
Lennox Furnace Co., Marshalltown, Ia.
Little Burner Co., Inc., H. C., San Rafael, Cal.
McLouth Air Conditioning Corp., Lansing, Mich.
McPherson Furnace & Supply Co., Portland, Ore.
Majestic Company, Huntington, Ind.
Marion Furnace Co., Detroit.
●May-Fiebeger Co., Newark, Ohio.
●Mayflower Air-Conditioners, Inc., St. Paul.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
Morrison Steel Products, Inc., Buffalo, N. Y.
●Mueller Furnace Co., L. J., Milwaukee.
National Manufacturing & Eng. Co., Detroit.
Nelson Company, Detroit.
Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit.
Northwest Stove & Furnace Works, Portland, Ore.
Nu-Way Corp., Rock Island, Ill.
●Olsen Mfg. Co., C. A., Elyria, O.
Pacific Gas Heating Co., San Francisco.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Patten Co., J. V., Sycamore, Ill.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Perfection Stove Co, Cleveland.
Petroleum Heat & Power Co., Stamford, Conn.
Quaker Mfg. Co., Chicago.
●Quincy Stove Manufacturing Co., Quincy, Ill.
Radiation Furnace Corp., Benton Harbor, Mich.
Ray Oil Burner Co., San Francisco.
Reif-Rexoil, Inc., Buffalo, N. Y.
Robinson Furnace Co., Chicago.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Company, Ashland, Ohio.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Sandberg Co., H. J., Portland, Ore.
●Schwab Furnace Co., Milwaukee, Wis.
Scott-Newcomb, Inc., St. Louis.
Season-Aire Corporation of America, Detroit.
Silent Sioux Oil Burner Corp., Orange City, Ia.
Skinner Htg. & Vent. Co., Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Standard Furnace & Supply Co., Omaha, Nebr.
Sundstrand Engineering Company, Rockford, Ill.
Sure Comfort Furnace Co., Berwyn, Ill.
Syncro-Flame Burner Corp., Willimantic, Conn.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Timken Silent Automatic Div., Timken-Detroit Axle Co., Detroit.
United States Radiator Corp., Detroit.
Viking Mfg. Corp., Dayton, Ohio.
Waterman-Waterbury Co., Minneapolis.
Wayne Oil Burner Co., Fort Wayne, Ind.
Weatherall Engineers, Inc., Providence, R. I.
Western Blower Company, Seattle, Wash.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Westwick & Son, Inc., John, Galena, Ill.
Wheeling Furnace Corporation, Martins Ferry, Ohio.
Williams Oil-O-Matic Heating Corporation, Bloomington, Ill.
Williamson Heater Co., Cincinnati.
●Wood Industries, Inc., Gar, Detroit.
York Ice Machinery Corp., York, Pa.
York Oil Burner Company, Inc., York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, STOKER, CAST IRON

(Complete matched, stoker-furnace, fan, filter, and humidifier unit)

Adelta Manufacturing Co., Philadelphia.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Auburn Foundry, Inc., Stoker Div., Auburn, Ind.
Bovee Furnace Works, Waterloo, Ia.
Chandler Co., Cedar Rapids, Ia.
Excelsior Stove & Mfg. Co., Quincy, Ill.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St Louis.
Grossenbacher Furnace Co., Inc., St. Louis.
Hess-Snyder Co., Massillon, O.
Homer Furnace & Foundry Corp., Coldwater, Mich.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
MaGirl Foundry and Furnace Works, P. H., Bloomington, Ill.
Montag Stove & Furnace Works, Portland, Ore.
●Mount Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee.
●Schwab Furnace Co., Milwaukee, Wis.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Sioux City Foundry & Boiler Co., Sioux City, Ia.
Williamson Heater Co., Cincinnati.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, STOKER, STEEL

(Complete matched, stoker-furnace, fan, filter, and humidifier unit)

Allis-Chalmers Mfg. Co., Milwaukee.
American Furnace Co., St. Louis.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Anchor Stove & Range Co., New Albany, Ind.
Andrews Heating Co., Minneapolis.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, Ohio.
Auburn Burner Co., Auburn, Ind.
Bard Mfg. Co., Bryan, Ohio.
Beck Engineering Combustion Kompany, St. Louis.
Bovee Furnace Works, Waterloo, Ia.
Campbell Heating Co., Des Moines, Ia.
Campbell Heating Co., E. K., Kansas City, Mo.
Chandler Co., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago.
●Conco Corporation, Mendota, Ill.
Deshler Foundry & Machine Works, Deshler, Ohio.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Farquhar Furnace Company, Wilmington, Ohio.
●Fitzgibbons Boiler Co., Inc., New York City.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Grossenbacher Furnace Co., Inc., St. Louis.

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●Hall-Neal Furnace Co., Indianapolis, Ind.
Heatlox Furnaces, Inc., Tacoma, Wash.
●Henry Furnace & Fdy. Co., Cleveland.
Hess-Snyder Co., Massillon, Ohio.
Hess Warming & Ventilating Co., Chicago.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.
Iron Fireman Manufacturing Co., Cleveland.
●Jackson & Church Co., Saginaw, Mich.
Joliet Heating Corp., Joliet, Ill.
Keith Furnace Co., Des Moines, Ia.
Kol-Master Corporation, Oregon, Ill.
Koons Furnace Co., Danville, Ill.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
McPherson Furnace & Supply Co., Portland, Ore.
Majestic Company, Huntington, Ind.
●May-Fiebeger Co., Newark, Ohio.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
National Manufacturing & Engineering Co., Detroit.
Nelson Company, Detroit.
Northwest Stove & Furnace Works, Portland, Ore.
●Olsen Mfg. Co., C. A., Elyria, O.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Pocahontas Fuel Company, Incorporated, Stoker Div., Cleveland.
●Premier Furnace Co., Dowagiac, Mich.
Robinson Furnace Co., Chicago, Ill.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, Ohio.
St. Louis Furnace Manufacturing Co., St. Louis, Mo.
Sandberg Co., H. J., Portland, Ore.
●Schwab Furnace Co., Milwaukee, Wis.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Stok-A-Fire Co., Inc., University City, Mo.
Stokermatic Company, Salt Lake City, Utah.
Sun-Fire Stoker Corporation, New Albany, Ind.
Sure Comfort Furnace Co., Berwyn, Ill.
Waterman-Waterbury Co., Minneapolis.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, UTILITY ROOM, COAL, STEEL

(Complete matched furnace with burner, fan, filter, humidifier)

Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Furnace Co., St. Louis, Mo.
American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.
Armstrong Furnace Company, Columbus, Ohio.
●Fitzgibbons Boiler Company, Inc., New York City.
Floral City Company, Monroe, Mich.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Joliet Heating Corporation, Joliet, Ill.
Lennox Furnace Co., Marshalltown, Ia.
Michigan Tank & Furnace Corp., Detroit.
●Olsen Manufacturing Co., C. A., Elyria, Ohio.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
Smith Heater Co., Peter, Detroit.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Viking Manufacturing Corporation, Dayton, Ohio.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, Ohio. (Cast Iron)

FURNACES, WARM AIR, AIR CONDITIONING, UTILITY ROOM, GAS, CAST IRON

(Complete matched furnace with burner, fan, filter, humidifier)

Airtemp Div., Chrysler Corporation, Dayton, Ohio.
American Foundry and Furnace Company, Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
●American Radiator and Standard Sanitary Corp., Pittsburgh.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bryant Heater Co., Cleveland.
Burke Stoker & Mfg. Co., Chicago.
●Forest City Foundries Co., Cleveland, O.
General Electric Co., Air Conditioning & Commercial Refrigeration Dept., Bloomfield, N. J.
●Hall-Neal Furnace Co., Indianapolis, Ind.
●Henry Furnace & Foundry Co., Cleveland.
●Mueller Furnace Company, L. J., Milwaukee.
Richmond Radiator Company, Inc., Uniontown, Pa.
Security Manufacturing Co., Kansas City, Mo.
Surface Combustion, Toledo.
Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y.
Viking Mfg. Corp., Dayton, Ohio.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, AIR CONDITIONING, UTILITY ROOM, GAS, STEEL

(Complete matched furnace with burner, fan, filter, humidifier)

Airtemp Div., Chrysler Corporation, Dayton, Ohio.
Aladdin Heating Corp., Oakland, Cal.
Allied Heating & Air Conditioning Co., Lawndale, Cal.
American Furnace Co., St. Louis.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Armstrong Furnace Company, Columbus, Ohio.
Bard Manufacturing Company, Bryan, Ohio.
Burke Stoker & Mfg. Co., Chicago.
●Conco Corporation, Mendota, Ill.
Dalzen Manufacturing Co., Detroit.
Electrogas Furnace Co., San Francisco.
Evanoil Div., Evans Products Co., Detroit.
Fraser and Johnston Co., San Francisco.
General Gas Light Co., Kalamazoo, Mich.
Gibraltar Engineering Co., Los Angeles.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Heating Equipment Co., San Francisco.
Holly Heating & Mfg. Co., So. Pasadena, Cal.
Huwer Heating Corp., Detroit.
Ideal Furnace Co., Detroit.
Kent Co., Inc., J. King, St. Louis.
Leeson Air Conditioning Corporation, Detroit.
Lennox Furnace Co., Marshalltown, Ia.
Majestic Co., Huntington, Ind.
Marion Furnace Co., Detroit.
●May-Fiebeger Company, Newark, Ohio.
●Mayflower Air Conditioners, Inc., St. Paul, Minn.
●Meyer Furnace Company, Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
Morrison Steel Products, Inc., Buffalo, N. Y.
●Mueller Furnace Company, L. J., Milwaukee.
National Manufacturing & Eng. Co., Detroit.
●Olsen Manufacturing Co., C. A., Elyria, Ohio.
Pacific Airmax Corporation, Huntington Park, Calif.
Palmer Manufacturing Corp., Phoenix, Ariz.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
Patten Co., J. V., Sycamore, Ill.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Perfection Stove Co., Cleveland.
Reznor Manufacturing Co., Merced, Pa.
Round Oak Co., Dowagiac, Mich.
Royal Air Conditioning Equip. Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
St. Louis Furnace Manufacturing Co., St. Louis.
Season-Aire Corporation of America, Detroit.
Security Manufacturing Co., Kansas City, Mo.
Viking Mfg. Corp., Dayton, Ohio.
Wayne Oil Burner Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
●Wood Industries, Inc., Gar, Detroit.

FURNACES, WARM AIR, AIR CONDITIONING, UTILITY ROOM, OIL, STEEL

(Complete matched furnace with burner, fan, filter, humidifier)

Airtemp Div., Chrysler Corporation, Dayton, Ohio.
American Furnace Co., St. Louis.
American Stove Company, Lorain Div., Lorain, Ohio.
Anchor Post Fence Co., Heating Div., Baltimore.
Auburn Burner Company, Auburn, Ind.
Bard Manufacturing Co., Bryan, Ohio.
Dalzen Manufacturing Co., Detroit, Mich.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich.
Evanoil Div., Evans Products Co., Detroit.
Gasoroil Mfg. Corp., Genoa City, Wis.
General Electric Company, Bloomfield, N. J.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Harvey-Whipple, Inc., Springfield, Mass.
●Henry Furnace & Foundry Co., Inc., Cleveland.
Hoffman Specialty Company, Inc., Indianapolis, Ind.
Huwer Heating Corp., Detroit.
Ideal Furnace Co., Detroit.
Interstate Metal Products Company, Inc., Chicago.
Joliet Heating Corporation, Joliet, Ill.
Kruse Company, Indianapolis, Ind.
Lennox Furnace Co., Marshalltown, Iowa.
Little Burner Co., Inc., H. C., San Rafael, Cal.
McPherson Furnace & Supply Co., Portland, Ore.
Majestic Company, Huntington, Ind.
Marion Furnace Co., Detroit.
●May-Fiebeger Company, Newark, Ohio.
Montag Stove & Furnace Works, Portland, Ore.
Morrison Steel Products, Inc., Buffalo, N. Y.
●Mueller Furnace Company, L. J., Milwaukee.
National Manufacturing & Eng. Co., Detroit.
Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit.
Northwest Stove & Furnace Works, Portland, Ore.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
Patten Co., J. V., Sycamore, Ill.

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Perfection Stove Co., Cleveland.
●Premier Furnace Company, Dowagiac, Mich.
Quaker Mfg. Co., Chicago.
●Quincy Stove Manufacturing Co., Quincy, Ill.
Round Oak Co., Dowagiac, Mich.
Sandberg Co., H. J., Portland, Ore.
Season-Aire Corporation of America, Detroit.
Silent Sioux Oil Burner Corp., Orange City, Iowa.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Viking Manufacturing Corp., Dayton, Ohio.
Wayne Oil Burner Co., Fort Wayne, Ind.
Weatherall Engineers, Inc., Providence, R. I.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
●Wood Industries, Inc., Gar, Detroit.
York Ice Machinery Corporation, York, Pa.
York Oil Burner Company, Inc., York, Pa.

FURNACES, WARM AIR, FLOOR, GRAVITY

(For suspension beneath floor)

AireOzone Corporation, Cicero, Ill (Oil)
Aladdin Heating Corp., Oakland, Cal.
Allied Heating & Air Conditioning Co., Lawndale, Cal.
American Radiator & Standard Sanitary Corp., Pittsburgh. (Gas, Oil)
Andes Range & Furnace Corp., Geneva, N. Y.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Beck Engineering Combustion Kompany, St. Louis.
Capps, Joseph, Inc., South Gate, Cal.
Cole Hot Blast Manufacturing Co., Chicago. (Gas and Oil)
Coleman Lamp & Stove Co., Wichita, Kan.
Dallman Supply Co., Sacramento, Cal.
Day & Night Manufacturing Co., Monrovia, Cal. (Gas)
East Anaheim Sheet Metal Works, Long Beach, Cal.
Electrogas Furnace Co., San Francisco, Cal. (Gas)
Fraser and Johnston Co., San Francisco.
●Gillen Company, J. L., Dowagiac, Mich.
Heating Equipment Co., San Francisco. (Gas)
Holley Heating & Mfg. Co., So. Pasadena, Cal.
Hotstream Heater Co., Cleveland.
Ideal Heating Corp., Los Angeles. (Gas)
King Metal Co., Oklahoma City, Okla.
Koons Furnace Co., Danville, Ill.
Little Burner Co., Inc., H. C., San Rafael, Cal. (Oil)
Miller Floor Furnace Co., Oakland, Cal.
Mission Water Heater Co., Los Angeles, Cal.
Monarch Heating Co., Los Angeles.
Moncrief Furnace & Mfg. Co., Inc., Dallas, Tex.
Moore Corporation, Joliet, Ill.
●Mt. Vernon Furnace & Mfg Co., Mt. Vernon, Ill. (Gas)
●Mueller Furnace Co., L. J., Milwaukee, Wis. (Gas)
Norge Heating & Cond. Div., Borg-Warner Corp., Detroit. (Oil)
O'Keefe & Merritt Co., Los Angeles.
Pacific Airmax Corporation, Huntington Park, Calif.
Pacific Gas Heating Co., San Francisco (Gas)
Palmer Manufacturing Corp., Phoenix, Ariz.
●Payne Furnace & Supply Co., Beverly Hills, Cal. (Gas)
Pennsylvania Furnace & Iron Co., Warren, Pa. (Gas)
Pioneer Water Heater Co., Los Angeles.
Quaker Manufacturing Co., Chicago. (Oil)
Rock Island Stove Co., Rock Island, Ill. (Coal)
Royal Air Conditioning Equipment Co., Alhambra, Cal. (Gas)
Stephens Mfg. Co., Tulsa, Okla.
Stoker-Lad, Inc., Tacoma, Wash.
Surface Combustion, Toledo, O. (Gas)
Sutphen & Co., J. W., Los Angeles.
Tennessee Enamel Mfg. Co., Nashville, Tenn.
U-Ni-Matic Heating Systems, Inc., Los Angeles, Cal. (Gas)
Utility Fan Corporation, Los Angeles. (Gas, Butane)
Ward Heater Company, Los Angeles, Cal. (Gas)
Woods-Everts Stove Co., Springfield, Mo.
●Zink Co., John, Tulsa, Okla. (Gas)

FURNACES, WARM AIR, GRAVITY, COAL, CAST IRON

Adelta Manufacturing Co., Philadelphia.
Agricola Furnace Co., Inc., Gadsden, Ala.
Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andes Range & Furnace Corp., Geneva, N. Y.
Barry Furnace Co., Hamilton, O.
Bergstrom Mfg. Corp., Neenah, Wis.
Bovee Furnace Works, Waterloo, Ia.
Brillion Furnace Co., Brillion, Wis.
Chandler Co., Cedar Rapids, Ia.
Columbus Heating and Ventilating Co., Columbus, O.
Crane Company, Chicago.
Danville Stove & Mfg. Co., Danville, Pa.
Detroit-Michigan Stove Co., Detroit, Mich.
●Dowagiac Steel Furnace Company, Dowagiac, Mich.
Edwards Furnace Co., Wellsboro, Pa.
Enterprise Foundry Co., Belleville, Ill.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Farris Furnace Co., Springfield, Ill.
Faultless Heater Corp., Cleveland, O.
Favorite Stove Co., Piqua, O.
Floyd-Wells Co., Royersford, Pa.
Foote Foundry Co., J. B., Fredericktown, O.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Fuller-Warren Co., Milwaukee, Wis.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hallstead Iron Foundry, Hallstead, Pa.
Hart & Crouse Corporation, Utica, N. Y.
Hart Mfg. Co., Louisville, Ky.
●Henry Furnace & Foundry Co., Cleveland, O.
Hess-Snyder Co., Massillon, O.
Home Furnace Co., Holland, Mich.
Home Stove Co., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co., Detroit, Mich.
Independence Stove & Furnace Co., Independence, Mo.
International Heater Co., Utica, N. Y.
Iowa Foundry Co., Sioux City, Ia.
Katelman Foundry & Mfg. Co., Council Bluffs, Iowa.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Syracuse, N. Y.
Klein Stove Co., Philadelphia, Pa.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
Majestic Co., Huntington, Ind.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co., Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
Moore Corp., Joliet, Ill.
●Mount Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Oakland Foundry Co., Belleville, Ill.
●Olsen Mfg. Co., C. A., Elyria, O.
Orbon Stove Co., Belleville, Ill.
●Peerless Foundry Co., Indianapolis, Ind.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Pittston Stove Co., Pittston, Pa.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Reynolds Manufacturing Co., Springfield, Mo.
Robinson Furnace Co., Chicago, Ill.
Rock Island Stove Co., Rock Island, Ill.
Rosebraugh Co. W. W., Salem, Ore.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
St. Clair Foundry Corp., Centralia, Ill.
St. Louis Furnace Mfg. Co., St. Louis, Mo.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Foundry and Boiler Co., Sioux City, Ia.
Spear Stove and Heater Co., James, Philadelphia.
Standard Furnace & Supply Co., Omaha, Nebr.
Thatcher Furnace Co., Garwood, N. J.
Twentieth Century Heating & Ventilating Co., Akron, O.
Union Manufacturing Co., Inc., Boyertown, Pa.
United States Radiator Corp., Detroit, Mich.
Western Furnaces, Inc., Tacoma, Wash.
Westwick & Son, Inc., John, Galena, Ill.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, GRAVITY, COAL, STEEL

Airtemp Div., Chrysler Corp., Dayton, Ohio.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andrews Heating Co., Minneapolis.
Arcweld Mfg. Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, O.
Bovee Furnace Works, Waterloo, Ia.
Campbell Heating Co., Des Moines, Ia.
Chandler Co., Cedar Rapids, Ia.
Daniels Mfg. Co., Inc., Sam, Hardwick, Vt.
Deshler Foundry & Mach. Wks., Deshler, O.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Farquhar Furnace Co., Wilmington, O.
Faultless Heater Corp., Cleveland, O.
Floral City Co., Monroe, Mich.
●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Gascol Furnace Co., Pittsburgh (Combination Coal and Gas)
Gehri Co., Tacoma, Wash.
Green Colonial Furnace Co., Des Moines, Ia.
Grossenbacher Furnace Co., St. Louis, Mo.
●Hall-Neal Furnace Co., Indianapolis, Ind.

Hart Mfg. Co., Louisville, Ky.
●Henry Furnace & Foundry Co., Cleveland, O.
Hess-Snyder Co., Massillon, O.
Hess Warming & Ventilating Co., Chicago, Ill.
Home Stove Co., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co, Detroit, Mich
Ingersoll Steel & Disc Div, Borg-Warner Corp., Chicago.
International Heater Co., Utica, N. Y.
●Jackson & Church Co., Saginaw, Mich.
Joliet Heating Corp., Joliet, Ill.
Keith Furnace Co., Des Moines, Ia.
Koons Furnace Co., Danville, Ill.
Kruse & Dewenter Co., Indianapolis, Ind.
●Leader Iron Works., Inc., Decatur, Ill.
Lennox Furnace Co., Marshalltown, Ia.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
McLouth Air Conditioning Corp., Lansing, Mich.
McPherson Furnace & Supply Co., Portland, Ore.
Majestic Co., Huntington, Ind.
Majestic Furnace Co., Seattle, Wash.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
ModernAire Co., Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Mfg. & Engineering Co., Detroit.
Northwest Stove & Furnace Works, Portland, Ore.
Nugent Furnaces, Thos., New York City.
●Olsen Mfg. Co., C. A., Elyria, O.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
●Peerless Foundry Co., Indianapolis, Ind.
Pennsylvania Engineering Works, New Castle, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Ramey Mfg Co., Columbus, O.
Riverside Furnace Co., Wausau, Wis.
Roberts-Hamilton Co., Minneapolis, Minn.
Robinson Furnace Co., Chicago.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
St. Louis Furnace Mfg. Co., St. Louis.
Sandberg Co., H. J., Portland, Ore.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Foundry and Boiler Co., Sioux City, Ia.
Spencer Heater Div., Aviation Corp., Williamsport, Pa.
Standard Furnace & Supply Co., Omaha, Nebr.
Stanton Heater Co., Martins Ferry, Ohio.
Sure Comfort Furnace Co., Berwyn, Ill.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Thatcher Furnace Company, Garwood, N. J.
Twentieth Century Heating & Ventilating Co., Akron, O.
United States Radiator Corp., Detroit.
Viking Mfg. Co., Dayton, Ohio.
Waterman-Waterbury Co., Minneapolis, Minn.
Wayne Oil Burner Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Wheeling Furnace Corporation, Martins Ferry, Ohio.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, GRAVITY, GAS, CAST IRON

American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
Bryant Heater Co., Cleveland, O.
Burke Stoker & Mfg. Co., Chicago.
Chandler Co., Cedar Rapids, Ia.
Favorite Stove Co., Piqua, O.
●Forest City Foundries Co., Cleveland, O.
Hart Mfg. Co., Louisville, Ky.
●Henry Furnace & Foundry Co., Cleveland.
Hess-Snyder Co., Massillon, O.
Ideal Furnace Co., Detroit.
Jackson Sheet Metal Works, Ogden, Utah. (Combination Iron and Steel)
Johnson Gas Furnace Corp., North Hollywood, Cal.
Kelsey Heating Co., Syracuse, N. Y.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Pacific Airmax Corporation, Huntington Park, Calif.
Richmond Radiator Co., Inc., Uniontown, Pa.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Company. Ashland, O.
Sioux City Foundry & Boiler Co., Sioux City, Ia.
Surface Combustion, Toledo, O.
Twentieth Century Heating & Ventilating Co., Akron, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.
York Ice Machinery Corporation, York, Pa.

FURNACES, WARM AIR, GRAVITY, GAS, STEEL

Airtemp Div., Chrysler Corp., Dayton, Ohio.
Aladdin Heating Corp., Oakland, Cal.
Allied Heating & Air Conditioning Co., Lawndale, Cal.
American Furnace Co., St. Louis, Mo.
American Radiator and Standard Sanitary Corp., Pittsburgh.
American Standard Gas Products Co., Detroit.
Andrews Heating Co., Minneapolis.
Armstrong Furnace Co., Columbus, O.
Atlas Heating & Ventilating Co., Ltd., San Francisco, Cal.
Bard Manufacturing Company, Bryan, Ohio.
Beck Engineering Combustion Kompany, St. Louis.
Burke Stoker & Mfg. Co., Chicago.
Bryant Corp., C. L., Cleveland O.
Calkins & Pearce, Columbus, O.
Cocking, Geo. J., Santa Ana, Cal.
Coleman Lamp & Stove Company, Wichita, Kansas.
Dallman Supply Co., Sacramento, Cal.
Dornback Furnace & Foundry Co., Cleveland.
Electrogas Furnace Co., San Francisco, Cal.
●Forest City Foundries Co., Cleveland, O.
Fraser and Johnston Co., San Francisco.
Gascol Furnace Co., Pittsburgh (Comb. Coal and Gas)
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Heating Equipment Co., San Francisco.
●Henry Furnace & Foundry Co., Cleveland.
Hess-Snyder Co., Massillon, O.
Holley Heating & Mfg. Co., So. Pasadena, Cal.
Hotentot Company, Inc., Omaha, Nebr.
Ideal Furnace Co., Detroit.
Independence Stove & Furnace Co., Independence, Mo.
Johnston Gas Furnace Corp., North Hollywood, Cal.
Lennox Furnace Co., Marshalltown, Ia.
Marion Furnace Co., Detroit.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
●Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Mfg. & Engineering Co., Detroit.
New Mission Heating & Ventilating Co., San Francisco.
Northern Furnace & Supply Co., Billings, Mont.
Nugent Furnaces, Thomas, New York City.
●Olsen Mfg. Co., C. A., Elyria, O.
Pacific Airmax Corporation, Huntington Park, Calif.
Pacific Gas Heating Company, San Francisco.
Palmer Manufacturing Corp., Phoenix, Ariz.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Perfection Stove Co., Cleveland.
Reznor Manufacturing Co., Mercer, Pa.
Royal Air Conditioning Equipment Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
Ryniker Sheet Metal Works, Billings, Mont.
St. Louis Furnace Mfg. Co., St. Louis.
Schill Mfg. Co., Crestline, Ohio.
Scott-Newcomb, Inc., St. Louis, Mo.
Season-Aire Corporation of America, Detroit.
Sonner Burner Co., Winfield, Kansas.
Standard Furnace & Supply Company, Omaha, Nebr.
Twentieth Century Heating & Ventilating Co., Akron, O.
United States Radiator Corp., Detroit.
Waterman-Waterbury Co., Minneapolis, Minn.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, GRAVITY, OIL, CAST IRON

Adelta Manufacturing Co., Philadelphia.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace & Foundry Co., Milan, Mich.
American Radiator & Standard Sanitary Corp., Pittsburgh.
Chandler Co., Cedar Rapids, Ia.
Edwards Furnace Co., Wellsboro, Pa.
Hart & Crouse Corporation, Utica, N. Y.
Hess-Snyder Co., Massillon, Ohio.
Ideal Furnace Co., Detroit.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Syracuse, N. Y.
●Mount Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee.
St. Louis Furnace Mfg. Co., St. Louis.
Sioux City Foundry & Boiler Co., Sioux City, Ia.
Thatcher Furnace Company, Garwood, N. J.

FURNACES, WARM AIR, GRAVITY, OIL, STEEL

Airtemp Division, Chrysler Corp., Dayton, Ohio.
American Air Conditioning Corp., Sebastopol, Cal.
American Furnace Co., St. Louis, Mo.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.

Andrews Heating Co., Minneapolis.
Arcweld Mfg. Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, O.
Bard Manufacturing Co., Bryan, O.
Beck Engineering Combustion Kompany, St. Louis.
Bovee Furnace Works, Waterloo, Ia.
Campbell Heating Co., Des Moines, Ia.
Cary Mfg. Co., Waupaca, Wis.
Chandler Company, Cedar Rapids, Ia.
Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich.
Evanoil Heater Div., Evans Products Co., Detroit.
Farquhar Furnace Co., Wilmington, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Gasoroil Mfg. Corp., Genoa City, Wis.
Gehri Co., Tacoma, Wash.
Gilbert & Barker Mfg. Co., Springfield, Mass.
●Gillen Company, J. L., Dowagiac, Mich.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hess-Snyder Co., Massillon, Ohio.
Hess Warming & Ventilating Co., Chicago.
Hotentot Co., Inc., Omaha, Nebr.
Ideal Furnace Co., Detroit.
Johnston Gas Furnace Corp., North Hollywood, Cal.
Joliet Heating Corp., Joliet, Ill.
Keith Furnace Co., Des Moines, Ia.
Koons Furnace Co., Danville, Ill.
Kruse Company, Indianapolis, Ind.
Kruse & Dewenter Co., Indianapolis, Ind.
Lennox Furnace Co., Marshalltown, Ia.
Little Burner Co., Inc., H. C., San Rafael, Cal.
McLouth Air Conditioning Corp., Lansing, Mich.
●May-Fiebeger Co., Newark, Ohio.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit, Mich.
Northwest Stove & Furnace Works, Portland, Ore.
Nugent Furnaces, Thomas, New York City.
●Olsen Mfg. Co., C. A., Elyria, O.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
●Peerless Foundry Co., Indianapolis, Ind.
Perfection Stove Co., Cleveland, O.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Quaker Manufacturing Co., Chicago.
●Quincy Stove Manufacturing Co., Quincy, Ill.
Rock Island Stove Co., Rock Island, Ill.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Co., Dowagiac, Mich.
●Rybolt Heater Company, Ashland, Ohio.
St. Louis Furnace Mfg. Co., St. Louis.
Sandberg Co., H. J., Portland, Ore.
Scott-Newcomb, Inc., St. Louis, Mo.
Standard Furnace & Supply Company, Omaha, Nebr.
Sure Comfort Furnace Co., Berwyn, Ill.
●Syncromatic Air Conditioning Corporation, Milwaukee.
Thatcher Furnace Company, Garwood, N. J.
Twentieth Century Heating & Ventilating Co., Akron, O.
United States Radiator Corp., Detroit.
Viking Mfg. Corp., Dayton, Ohio.
Waterman-Waterbury Co., Minneapolis, Minn.
Wayne Oil Burner Co., Fort Wayne, Ind.
Western Blower Company, Seattle, Wash.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, GRAVITY, STOKER, CAST IRON

Adelta Manufacturing Co., Philadelphia.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Anchor Stove & Range Co., New Albany, Ind.
Bovee Furnace Works, Waterloo, Ia.
Chandler Co., Cedar Rapids, Ia.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Grossenbacher Furnace Co., Inc., St. Louis.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hess-Snyder Co., Massillon, Ohio.
Ideal Furnace Co., Detroit.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Inc., Syracuse, N. Y.
Majestic Co., Huntington, Ind.
●Meyer Furnace Co., Peoria, Ill.
Montag Stove & Furnace Works, Portland, Ore.
●Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co, L. J., Milwaukee. (Double Radiator)
●Premier Furnace Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Fdy. & Boiler Co., Sioux City, Ia.
Twentieth Century Heating & Ventilating Co., Akron, Ohio.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, Ohio.

FURNACES, WARM AIR, GRAVITY, STOKER, STEEL

American Furnace Company, St. Louis.
American Furnace & Foundry Co., Milan, Mich.
American Radiator & Standard Sanitary Corp., Pittsburgh.
Andrews Heating Company, Minneapolis.
Arcweld Mfg. Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, O.
Beck Engineering Combustion Kompany, St. Louis.
Floral City Co., Monroe, Mich.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Grossenbacher Furnace Co., St. Louis.
●Hall-Neal Furnace Co., Indianapolis, Ind.
●Henry Furnace & Foundry Co., Cleveland, O.
Hess-Snyder Co., Massillon, Ohio.
Hess Warming & Ventilating Co., Chicago, Ill.
Ideal Furnace Co., Detroit.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.
Keith Furnace Co., Des Moines, Ia.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
Majestic Co., Huntington, Ind.
●May-Fiebeger Co., Newark, Ohio.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Northwest Stove & Furnace Works, Portland, Ore.
●Olsen Mfg. Co., C. A., Elyria, O.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
●Premier Furnace Co., Dowagiac, Mich.
Round Oak Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, Ohio.
St. Louis Furnace Mfg. Co., St. Louis.
●Schwab Furnace Co., Milwaukee, Wis.
Spencer Heater Div., Aviation Corp., Williamsport, Pa.
Stok-A-Fire Co., Inc., University City, Mo.
Stokermatic Company, Salt Lake City, Utah.
Sure Comfort Furnace Co., Berwyn, Ill.
Twentieth Century Heating & Ventilating Co., Akron, O.
Waterman-Waterbury Co., Minneapolis, Minn.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, HORIZONTAL

American Foundry & Furnace Co., Bloomington, Ill.
Andrews Heating Co., Minneapolis.
Arcweld Mfg. Co., Inc., Seattle, Wash.
Campbell Heating Co., E. K., Kansas City, Mo.
Columbus Heating and Ventilating Co., Columbus, O.
Floral City Co., Monroe, Mich.
MaGirl Foundry & Furnace Works, P. H., Bloomington, Ill.
Majestic Co., Huntington, Ind.
McPherson Furnace & Supply Co., Portland, Ore.
Moncrief Furnace Co., Atlanta, Ga.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Engineering Co., Detroit.
Northwest Stove & Furnace Works, Portland, Ore.
Parker Heating & Manufacturing Co., St. Petersburg, Fla.
Ramey Mfg. Co., Columbus, O.
Rosebraugh Co., W. W., Salem, Ore.
Sandberg Co., H. J., Portland, Ore.
Twentieth Century Heating & Ventilating Co., Akron, O.
Western Blower Company, Seattle, Wash.
Western Furnaces, Inc., Tacoma, Wash.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, PIPELESS, CAST IRON

Agricola Furnace Co., Inc., Gadsden, Ala.
●Airtherm Mfg. Co., St. Louis.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andes Range & Furnace Corp., Geneva, N. Y.
Barry Furnace Co., Hamilton, O.
Brillion Furnace Co., Brillion, Wis.
Chandler Co., Cedar Rapids, Ia.
Danville Stove & Mfg. Co., Danville, Pa.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
Edwards Furnace Co., Wellsboro, Pa.
Enterprise Foundry Co., Belleville, Ill.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Favorite Stove Co., Piqua, O.
Floyd-Wells Co., Royersford, Pa.

●Forest City Foundries Co., Cleveland, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Grossenbacher Furnace Co., Inc., St. Louis.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hart & Crouse Corporation, Utica, N. Y.
Hart Mfg. Co., Louisville, Ky.
●Henry Furnace & Foundry Co., Cleveland, O.
Home Furnace Co., Holland, Mich.
Home Stove Co., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co., Detroit, Mich.
Independence Stove & Furnace Co., Independence, Mo.
International Heater Company, Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Syracuse, N. Y.
MaGirl Foundry and Furnace Works, P. H., Bloomington, Ill.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
Montag Stove & Furnace Works, Portland, Ore.
Moore Corp., Joliet, Ill.
●Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Olsen Mfg. Co., C. A., Elyria, O.
Orbon Stove Co., Belleville, Ill.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Pittston Stove Co., Pittston, Pa.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Ravenna Furnace & Heating Co., Ravenna, O.
Robinson Furnace Co., Chicago, Ill.
Rudy Furnace Co., Dowagiac, Mich.
●Rybolt Heater Co., Ashland, O.
St. Clair Foundry Corp., Centralia, Ill.
St. Louis Furnace Mfg. Co., St. Louis, Mo.
Schill Mfg. Co., Crestline, O.
●Schwab Furnace Co., Milwaukee, Wis.
Sioux City Foundry & Boiler Co., Sioux City, Iowa.
Spear Stove and Heater Co., James, Philadelphia.
Stiglitz Furnace & Foundry Co., Louisville, Ky.
Thatcher Furnace Co., Garwood, N. J.
Twentieth Century Heating & Ventilating Co., Akron, O.
United States Radiator Corp., Detroit, Mich.
Western Furnaces, Inc., Tacoma, Wash.
Westwick & Son, Inc., John, Galena, Ill.
Williamson Heater Co., Cincinnati, O.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, PIPELESS, STEEL

●Airtherm Manufacturing Co., St. Louis.
Aladdin Heating Corp., Oakland, Cal.
American Furnace & Foundry Co., Milan, Mich.
Andrews Heating Co., Minneapolis.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Armstrong Furnace Co., Columbus, O.
Campbell Heating Co., Des Moines, Ia.
Daniels Mfg. Co., Inc., Sam, Hardwick, Vt.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
Grossenbacher Furnace Co., St. Louis.
Hart Mfg. Co., Louisville, Ky.
●Henry Furnace & Foundry Co., Cleveland, O.
Hess Warming & Ventilating Co., Chicago, Ill.
Home Stove Co., Indianapolis, Ind.
Ideal Furnace Co., Detroit, Mich.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Syracuse, N. Y.
Koons Furnace Co., Danville, Ill.
Kruse & Dewenter Co., Indianapolis, Ind.
Lennox Furnace Co., Marshalltown, Ia.
Majestic Furnace Co., Seattle, Wash.
●May-Fiebeger Co., Newark, O.
●Meyer Furnace Co., Peoria, Ill.
Michigan Tank & Furnace Corp., Detroit.
Montag Stove & Furnace Works, Portland, Ore.
Northwest Stove & Furnace Works, Portland, Ore.
Nugent Furnaces, Thos., New York City.
●Olsen Mfg. Co., C. A., Elyria, O.
Orbon Stove Co., Belleville, Ill.
●Peerless Foundry Co., Indianapolis, Ind.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Ramey Mfg. Co., Columbus, O.
Roberts-Hamilton Co., Minneapolis, Minn.
Rosebraugh Co., W. W., Salem, Ore.
St. Louis Furnace Mfg. Co., St. Louis, Mo.
●Schwab Furnace Co., Milwaukee, Wis.
Stanton Heater Co., Martins Ferry, O.
Stiglitz Furnace & Foundry Co., Louisville, Ky.
Twentieth Century Heating & Ventilating Co., Akron, O.
Waterman-Waterbury Co., Minneapolis, Minn.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

FURNACES, WARM AIR, WOOD BURNING, CAST IRON

Hart & Crouse Corporation, Utica, N. Y.
Homer Furnace & Foundry Corp., Coldwater, Mich.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
MaGirl Foundry and Furnace Works, P. H., Bloomington, Ill.
Majestic Company, Huntington, Ind.
Moncrief Furnace & Mfg. Co., Dallas, Tex.
Montag Stove & Furnace Works, Portland, Ore.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Oakland Foundry Co., Belleville, Ill.
Portland Stove Foundry Co., Portland, Me.
●Schwab Furnace Co., Milwaukee, Wis.
Western Furnaces, Inc., Tacoma, Wash.

FURNACES, WARM AIR, WOOD BURNING, STEEL

American Furnace Co., St. Louis.
Andrews Heating Co., Minneapolis.
Arcweld Manufacturing Co., Inc., Seattle, Wash.
Bovee Furnace Works, Waterloo, Ia.
Campbell Heating Co., E. K., Kansas City, Mo.
Daniels Mfg. Co., Inc., Sam, Hardwick, Vt.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Grossenbacher Furnace Co., St. Louis.
●Henry Furnace & Foundry Co., Cleveland.
Hess Warming & Ventilating Co., Chicago, Ill.
Lennox Furnace Co., Marshalltown, Ia.
McLouth Air Conditioning Corp., Lansing, Mich.
McPherson Furnace & Supply Co., Portland, Ore. (Also Sawdust)
●Meyer Furnace Co., Peoria, Ill.
Moncrief Furnace & Mfg. Co., Dallas, Texas.
Montag Stove & Furnace Works, Portland, Ore.
Northwest Stove & Furnace Works, Portland, Ore.
Nugent Furnaces, Thomas, New York City.
Parker Heating & Mfg. Co., St. Petersburg, Fla.
Rosebraugh Co., W. W., Salem, Ore.
Sandberg Co., H. J., Portland, Ore.
●Schwab Furnace Co., Milwaukee, Wis.
●Syncromatic Air Conditioning Corporation, Milwaukee.

GAGES, AIR FILTER

Air Filter Engineering Co., Chicago.
Defender Automatic Regulator Co., St. Louis.
Dwyer Mfg. Co., F. W., Chicago.
Ellison Draft Gage Co., Chicago.
Friez & Sons, Julien P., Towson, Md.
Hays Corporation, Michigan City, Ind.
Herbusch Corporation, Simplex Control Div., St. Louis.
Hill, E. Vernon, Chicago.
Huyette Co., Inc., Paul B., Philadelphia.
Meriam Co., Cleveland.

GAS BURNERS

See Burners, Gas

GAGES, INDICATING, DRAFT, PORTABLE

American Schaeffer & Budenberg Instrument Div., Manning, Maxwell & Moore, Inc., Bridgeport, Conn.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Defender Automatic Regulator Co., St. Louis.
Detroit Air Conditioning Service Co., Inc., Detroit.
Dwyer Mfg. Co., F. W., Chicago.
Ellison Draft Gage Co., Chicago, Ill.
Foxboro Co., Foxboro, Mass.
Friez & Sons, Julien P., Towson, Md.
Hays Corp., Michigan City, Ind.
Hill, E. Vernon, Chicago, Ill.
Hotstream Heater Co., The, Cleveland, O.
Marsh Corporation, Jas. P., Chicago.
●Marshalltown Manufacturing Co., Marshalltown, Iowa.
Meriam Co., Cleveland, O.
Moeller Instrument Co., Richmond Hill, N. Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York City.
Scherr Co., Inc., Geo., New York City.
Scientific Instrument Co., Detroit.
Taylor Instrument Companies, Rochester, N. Y.
Uehling Instrument Co., Paterson, N. J.
Weaver Mfg. Co., Springfield, Ill.

GATES, BLAST

See Blast Gates

GLASS, SAFETY

Pittsburgh Plate Glass Company, Pittsburgh.
Saftee Glass Co., Philadelphia.

GLASS, WIRE, FOR SKYLIGHTS

Atcheson Glass Co., T. J., Buffalo.
Bache & Co., Semon, New York City.
Mississippi Glass Company, New York City.
Pennsylvania Wire Glass Co., Philadelphia.
Pittsburgh Plate Glass Co., Pittsburgh.

GLAZING COMPOUNDS

See Compounds, Glazing

GRATES, CONVERSION, SELF-SUPPORTING

Albert Lea Foundry, Albert Lea, Minn.
Anchor Post Fence Co., Heating Div., Baltimore, Md.
Delaware, Lackawanna & Western Coal Co., New York City.
Stoket Manufacturing Co., St. Paul, Minn.

GRILLES, HEATING AND VENTILATING

A-J Manufacturing Co., Kansas City, Mo. (Stamped Steel)
Acme Tin Plate & Roofing Supply Co., Philadelphia.
●Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York City.
Airo-Fin Grille Co., Detroit.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo, O.
●Auer Register Co., Cleveland, O.
Barber-Colman Company, Rockford, Ill.
Beckley Perforating Co., Garwood, N. J.
Best Register Co., Milwaukee, Wis.
●Brundage Co., Kalamazoo, Mich.
Central Wire & Iron Works, Des Moines, Ia.
Char-Gale Mfg. Co., Minneapolis.
Crown Iron Works, Minneapolis.
Davies Air Filter Corp., New York City.
Decatur Iron & Steel Co., Decatur, Ala.
Diamond Mfg. Co., Wyoming, Pa.
Eaglesfield Ventilator Co., Indianapolis, Ind.
Erdle Perforating Co., Rochester, N. Y.
Gillian Mfg. Co., Detroit.
●Harrington & King Perforating Co., Chicago, Ill.
●Hart & Cooley Mfg. Co., Holland, Mich.
Hendrick Mfg. Co., Carbondale, Pa.
●Independent Register Co., Cleveland, O.
Jamieson Mfg. Co., Dallas, Texas.
Johnston & Chapman Co., Chicago.
Lamneck Products, Inc., Middletown, Ohio.
Lockjoint Wood Products Co., Wichita Kan. (Wood)
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Mundt & Sons, Charles, Jersey City, N. J.
Newman Brothers, Inc., Cincinnati, O.
●Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Reliable Perforating Co., Chicago, Ill.
Roberts-Hamilton Co., Minneapolis, Minn.
●Rock Island Register Co., Rock Island, Ill.
Schoedinger, F. O., Columbus, Ohio.
●Standard Stamping & Perforating Co., Chicago.
Stewart Manufacturing Co., Orange, N. J.
●Tuttle & Bailey, Inc., New Britain, Conn.
U. S. Air Conditioning Corp, Minneapolis.
●United States Register Co., Battle Creek, Mich.
Utiltiy Fan Corporation, Los Angeles, Cal.
Waterloo Register Co., Waterloo, Ia.
Western Wire & Iron Works, Inc., Chicago, Ill.
Wickwire Spencer Steel Co., New York City.
Wooster Art Wood, Inc., Wooster, Ohio. (Wood)

GRINDERS, BUFFERS, POLISHERS AND SANDERS

See Buffers, Grinders, Polishers and Sanders

GROOVING MACHINES

See Machines, Grooving

GUARDS, MACHINERY

California Wire Cloth Corporation, Oakland, Cal.
●Harrington & King Perforating Co., Chicago.
Littleford Bros., Inc., Cincinnati, Ohio.
Riester & Thesmacher Company, Cleveland.

GUARDS, SNOW

●Berger Brothers Co., Philadelphia, Pa.
Boyd & Co., Inc., Chas. P., Philadelphia.
Cartier & Sons Company, M. N., Providence, R. I.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Downs-Smith Brass & Copper Co., New York City.
Eastern States Supply Co., Brooklyn, N. Y.
Folsom Snow Guard Co., Boston, Mass.
●Hussey & Co., C. G., Pittsburgh, Pa. (Copper)
Levow, David, New York City.
Maysteel Products, Inc., Mayville, Wis.
Royal-Apex Mfg. Corp., Brooklyn, N. Y. (Cast Iron)
Wickwire Spencer Steel Co., New York City.

GUNS, SPRAY, METALS

Turner Brass Works, Sycamore, Ill.

GUNS, SPRAY, PAINT

Binks Mfg. Co., Chicago, Ill.
De Vilbiss Co., Toledo, O.
Eclipse Air Brush Company, Inc., Newark, N. J.
Electric Sprayit Co., Sheboygan, Wis.
Imperial Brass Mfg. Co., Chicago, Ill.
Milburn Co., Alexander, Baltimore, Md.
Norris Painting & Machinery Corp., Greenwich, Conn.
Spray Engineering Co., Somerville, Mass.

GUTTER FORMERS

See Machines, Gutter Forming

GUTTERS

See Eaves Trough and Gutters

HAMMERS, ELECTRIC OR PNEUMATIC

(For closing Pittsburgh locks)
See Tools, Metal Workers

HANGERS

See Fittings and Accessories, Eaves Trough and Gutter

HARDWARE, FOR CABINETS AND CASINGS

(Handles, name plates, etc.)

American Cabinet Hardware Corp., Rockford, Ill. (Pulls, Knobs, Hinges, Catches, etc.)
American Emblem Co., Utica, N. Y. (name plates)
American Insulator Corp., New Freedom, Pa.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Brasco Manufacturing Co., Harvey, Ill.
Crowe Name Plate & Mfg. Co., Chicago.
Dickey-Grabler Co., Cleveland (name plate)
Etched Products Co., Long Island City, N. Y. (name plates)
General Etching & Mfg. Co., Chicago (name plates)
Grammes, L. F., & Sons, Inc., Allentown, Pa.
Imperial Molded Products Corp., Chicago (Plastic handles, pulls and knobs)
Mason & Sons, F. E., Batavia, N. Y. (name plates)
Metal Marker Co., Cleveland. (name plates)
National Lock Co., Rockford, Ill.
Premier Metal Etching Co., Long Island City (name plates)
Soss Manufacturing Co., Detroit, Mich. (Invisible Hinges)
Stafford Co., N., Brooklyn, N. Y. (name plates)
Stanley Mfg. Co., Dayton, O. (name plates)

HEADS

See Fittings and Accessories, Conductor

HEAT TRANSFER SURFACE

See Coils, Cooling, Direct Expansion; Coils, Heating; Coils, Cooling, Water

HEATERS, CIRCULATING, CABINET TYPE

Acme Tin Plate & Roofing Supply Co., Philadelphia. (Electric)
American Stove Company, Lorain Div., Lorain, Ohio. (Oil)
Andrews Heating Co., Minneapolis. (Coal and Oil)
Auburn Burner Co., Auburn, Ind. (Oil)
Cole Hot Blast Manufacturing Co., Chicago. (Coal, Oil, Gas, Wood)
Continental Stove Corp., Ironton, O. (Gas)
Dallman Supply Co., Sacramento, Cal. (Gas)
Day & Night Manufacturing Co., Monrovia, Cal. (Gas)
Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich. (Oil)
Edwards Manufacturing Co., Inc., Cincinnati (Coal, Coke, Wood)
Enterprise Foundry Co., Belleville, Ill. (Coal and Wood)
Estate Stove Co., Hamilton, O.
Evanoil Heater Div., Evans Products Co., Detroit. (Oil & Gas)
Florence Stove Co., Garner, Mass. (Oil)
Heating Equipment Co., San Francisco. (Gas)
Independence Stove & Furnace Co., Independence, Mo. (Gas or Coal)
Iron Fireman Manufacturing Co., Cleveland. (Coal, Stoker)
Kehm Corporation, Chicago. (Gas and Coal)
Laco Oil Burner Co., Griswold, Ia. (Oil)
Little Burner Co., Inc., H. C., San Rafael, Cal. (Oil)
Lonergan Manufacturing Co., Albion, Mich.
●Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill. (Coal, Gas, Oil and Wood)
Moore Corporation, Joliet, Ill.
Ohio Foundry & Mfg. Co., Steubenville, O. (Gas)

● Advertisement in this issue. See Index to Advertisers, page 252

Pacific Airmax Corporation, Huntington Park, Calif. (Gas)
Palmer Mfg. Corp., Phoenix, Ariz. (Gas)
Patten Co., J. V., Sycamore, Ill. (Coal, Oil and Gas)
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Perfection Stove Co., Cleveland. (Oil)
Pernot & Rich, Inc., Los Angeles.
Pittston Stove Co., Pittston, Pa. (Coal or Wood)
Quaker Mfg. Co., Chicago, Ill. (Oil)
●Quincy Stove Mfg. Co., Quincy, Ill. (Oil and Coal)
Reznor Mfg. Co., Mercer, Pa. (Gas)
Royal Air Conditioning Equip. Co., Alhambra, Cal.
Schoedinger, F. O., Columbus, Ohio.
Silent Glow Oil Burner Corp., Hartford, Conn. (Range Oil)
Silent Sioux Oil Burner Corp., Orange City, Ia. (Oil)
Surface Combustion, Toledo, O. (Gas)
Tennessee Enamel Mfg. Co., Nashville, Tenn. (Gas)
Utility Fan Corporation, Los Angeles. (Gas, Butane)
Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y. (Gas)
Victor Oil Burner Mfg. Co., Hartford, Conn.
Viking Mfg. Corp., Dayton, Ohio. (Oil)

HEATERS, RADIANT, GAS-FIRED

Schoedinger, F. O., Columbus, Ohio.

HEATERS, SCHOOL ROOM

Agricola Furnace Co., Inc., Gadsden, Ala.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace & Foundry Co., Milan, Mich.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Andrews Heating Co., Minneapolis.
Barry Furnace Co., Hamilton, O.
Brillion Furnace Co., Brillion, Wis.
Campbell Heating Co., Des Moines, Ia.
Chandler Co., Cedar Rapids, Ia.
Daniels Mfg. Co., Inc., Sam, Hartwick, Vermont. (Wood)
Danville Stove & Mfg. Co., Danville, Pa.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Green Colonial Furnace Co., Des Moines, Ia.
Hart & Crouse Corporation, Utica, N. Y.
Hart Mfg. Co., Louisville, Ky. (Coal and Gas)
Heating Equipment Co., San Francisco. (Gas)
●Henry Furnace & Foundry Co., Cleveland, O.
Hess-Snyder Co., Massillon, Ohio.
Home Stove Co., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
International Heater Co., Utica, N. Y.
Keith Furnace Co., Des Moines, Ia.
Kelsey Heating Co., Syracuse, N. Y.
Koons Furnace Co., Danville, Ill.
Lennox Furnace Co., Marshalltown, Ia.
Little Burner Co., Inc., H. C., San Rafael, Cal. (Oil)
MaGirl Foundry and Furnace Works, P. H., Bloomington, Ill.
McLouth Air Conditioning Corp., Lansing, Mich.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
●May-Fiebeger Co., Newark, Ohio.
●Meyer Furnace Co., Peoria, Ill.
Moncrief Furnace Co., Atlanta, Ga.
Moore Corp., Joliet, Ill.
●Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
National Manufacturing & Engineering Co., Detroit.
Nesbitt, Inc., John J., Philadelphia.
Orbon Stove Co., Belleville, Ill.
Patten Co., J. V., Sycamore, Ill. (Coal, Oil and Gas)
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Perfection Stove Co., Cleveland. (Oil)
Pittston Stove Co., Pittston, Pa.
Portland Stove Foundry Co., Portland, Me.
●Premier Furnace Co., Dowagiac, Mich.
Quaker Mfg. Co., Chicago.
Reynolds Manufacturing Co., Springfield, Mo.
Reznor Mfg. Co., Mercer, Pa.
Rock Island Stove Co., Rock Island, Ill.
Round Oak Co., Dowagiac, Mich.
Royal Air Conditioning Equip. Co., Alhambra, Cal.
Rudy Furnace Co., Dowagiac, Mich.
St. Clair Foundry Corp., Centralia, Ill.
Sioux City Foundry and Boiler Co., Sioux City, Ia.
Tennessee Enamel Mfg. Co., Nashville, Tenn. (Gas)
Twentieth Century Heating & Ventilating Co., Akron. O.
Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y.
Waterman-Waterbury Co., Minneapolis, Minn. (Coal and Wood)
Western Blower Co., Seattle, Wash.
Williamson Heater Co., Seattle, Wash.
●Wise Furnace Co., Akron, O.
XXth Century Heating & Ventilating Co., Akron, O.

HEATING COILS

See Coils, Heating

HEATERS, WATER, OIL-FIRED

Airtemp Division, Chrysler Corporation, Dayton, Ohio.
Aldrich Company, Wyoming, Ill.
American Furnace & Foundry Co., Milan, Mich.
Anchor Post Fence Co., Heating Div., Baltimore.
Auburn Burner Company, Auburn, Ind.
Automatic Burner Corporation, Chicago.
●Automatic Humidifier Co., Cedar Falls, Iowa.
Century Engineering Corporation, Cedar Rapids, Iowa.
Chandler Company, Cedar Rapids, Ia.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Duo-Therm Div., Motor Wheel Corporation, Lansing, Mich.
Electrol Incorporated, Clifton, N. J.
Essick Manufacturing Company, Los Angeles, Cal.
Florence Stove Co., Gardner, Mass.
Gerstein & Cooper Co., South Boston, Mass.
●Gillen Company, J. L., Dowagiac, Mich.
Johnson Co., S. T., Oakland, Cal.
Kleen-Heet, Inc., Chicago.
●Lochinvar Products, Division of Michigan Tank & Furnace Corp., Dearborn, Mich.
Michigan Tank & Furnace Corp., Detroit.
National Airoil Burner Co., Inc., Philadelphia.
Nu-Way Corp., Rock Island, Ill.
Ohio Foundry & Mfg. Co., Steubenville, Ohio.
Pan-American Engineering Company, Berkeley, Calif.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Perfection Stove Co., Inc., Cleveland.
Petroleum Heat & Power Co., Stamford, Conn.
Quaker Manufacturing Co., Chicago.
●Quincy Stove Mfg. Co., Quincy, Ill.
Ray Oil Burner Company, San Francisco.
Scott-Newcomb, Inc., St. Louis.
Standard Heater & Oil Equipment Co., Jersey City, N. J.
Taco Heaters, Inc., New York City.
Viking Mfg. Corp., Dayton, Ohio.
Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
York Oil Burner Company, Inc., York, Pa.

HEATERS, WATER, STOKER-FIRED

Gehl Bros. Mfg. Co., West Bend, Wis.
Illinois Iron & Bolt Co., Chicago.
Pan-American Engineering Company, Berkeley, Calif.
●Schwitzer-Cummins Company, Indianapolis, Ind.
Standard Heater & Oil Equipment Co., Jersey City, N. J.

HEATERS, WATER, STORAGE, GAS

Schoedinger, F. O., Columbus, Ohio.

HOSE, METAL, FOR ELIMINATING COMPRESSOR VIBRATION

American Metal Hose Branch, American Brass Co., Waterbury, Conn.
Atlantic Metal Hose Co., Inc., New York City.
Chicago Metal Hose Corporation, Maywood, Ill.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Eclipse Aviation, Div. Bendix Aviation Corp., Bendix, N. J.
Packless Metal Products Corp., New Rochelle, N. Y.
Pennsylvania Flexible Metallic Tubing Co., Philadelphia.
Seamless Co., Long Island City, N. Y.
Titeflex Metal Hose Co., Newark, N. J.
United Metal Hose Co., Inc., Long Island City, N. Y.

HOUSINGS, BLOWER

Air Controls, Inc., Cleveland, O.
●Brundage Co., Kalamazoo, Mich.
●Clarage Fan Co., Kalamazoo, Mich.
Commercial Shearing & Stamping Co., Youngstown, Ohio.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Detroit Stamping Co., Detroit.
Economy Electric Mfg. Co., Cicero, Ill.
General Blower Corp., San Francisco.
Hastings Air Conditioning Co., Inc., Hastings, Nebr.
Lau Blower Co., Dayton, Ohio.
National Manufacturing & Engineering Co., Detroit.
Royal Air Conditioning Equipment Co., Alhambra, Cal.
Sandberg Co., H. J., Portland, Ore.
●Schwitzer-Cummins Co., Indianapolis, Ind.
●Sturtevant Co., B. F., Hyde Park, Boston.
U. S. Air Conditioning Corp., Minneapolis.
Viking Air Conditioning Corp., Cleveland.

HOUSINGS, FAN, PROPELLER

Commercial Shearing & Stamping Co., Youngstown, Ohio. (Venturi type)
Dahlstrom Metallic Door Co., Jamestown, N. Y.

HUMIDIFIER FITTINGS

See Fittings, Humidifier, Water Line

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HUMIDIFIER VALVES

See Valves, Humidifier, Water Level

HUMIDIFIERS, FURNACE, EVAPORATION, AUTOMATIC

Agricola Furnace Co., Inc., Gadsden, Ala.
American Air Conditioning Co., Minneapolis, Minn.
American Furnace & Foundry Co., Milan, Mich.
●Automatic Humidifier Co., Cedar Falls, Ia.
Badger Mfg. & Sales Co., Milwaukee.
Barclay, Inc., Robert, Chicago.
Bard Manufacturing Company, Bryan, Ohio.
Betz Air Conditioning Corp., Kansas City, Mo.
Cary Mfg. Co., Waupaca, Wis.
Chandler Co., Cedar Rapids, Ia.
Gardner Manufacturing Co., Horicon, Wis.
Glasby Manufacturing Company, Inc., J. P., Bloomfield, N. J.
Green Colonial Furnace Co., Des Moines, Ia.
●Hall-Neal Furnace Co., Indianapolis, Ind.
●Henry Furnace & Foundry Co., Cleveland, O.
Home Furnace Co., Holland, Mich.
Ideal Furnace Co., Detroit, Mich.
Iowa Foundry Co., Sioux City, Ia.
Kraker, Henry, Holland, Mich.
Lennox Furnace Co., Marshalltown, Iowa.
Little Burner Co., Inc., H. C., San Rafael, Cal.
McDonnell & Miller, Chicago.
Maid-O'-Mist, Inc., Chicago, Ill.
Marshall Furnace Co., Marshall, Mich.
●Mayflower Air-Conditioners, Inc., St. Paul.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Monmouth Products Co., Cleveland, O.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Nugent Furnaces, Thomas, New York City.
●Olsen Manufacturing Co., C. A., Elyria, Ohio.
Patten Co., J. V., Sycamore, Ill.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Pfening Co., Fred D., Columbus, Ohio.
●Premier Furnace Co., Dowagiac, Mich.
Roberts-Hamilton Co., Minneapolis, Minn.
Rockford Brass Works, Rockford, Ill.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
Russell & Company, W. A., Bridgeport, Conn.
Security Manufacturing Co., Kansas City, Mo.
Sioux City Foundry and Boiler Co., Sioux City, Ia.
Skilbeck Mfg. Co., Kenosha, Wis.
Skuttle Manufacturing Co., Detroit.
Somers, Inc., H. J., Detroit, Mich.
Thatcher Furnace Co., Garwood, N. J.
Viking Air Conditioning Corp., Cleveland, O.
Western Blower Co., Seattle, Wash.
Westinghouse Electric & Mfg. Co., Springfield, Mass.
●Wise Furnace Co., Akron, O.

HUMIDIFIERS, FURNACE, SPRAY, AUTOMATIC

Air Controls, Inc., Cleveland, O.
American Foundry & Furnace Co., Bloomington, Ill.
American Radiator and Standard Sanitary Corp., Pittsburgh.
Binks Mfg. Co., Chicago, Ill.
Bishop & Babcock Mfg. Co., Cleveland, O.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Electric Sprayit Company, Sheboygan, Wis.
Handelan Washed Air Co., Minneapolis, Minn.
Hubbard Company, Minneapolis.
McLouth Air Conditioning Corp., Lansing, Mich.
Marshall Furnace Co., Marshall, Mich.
●Mayflower Air-Conditioners, Inc., St. Paul
●Meyer Furnace Co., Peoria, Ill.
Rega Mfg. Co., Rochester, N. Y.
Somers, Inc., H J., Detroit, Mich.
Spray Engineering Co., Somerville, Mass.
Spraying Systems Company, Chicago.
Supreme Electric Products Corp., Rochester, N. Y.
Thatcher Furnace Co., Garwood, N. J.
United American Bosch Corp., Springfield, Mass.

HUMIDIFIERS, UNIT, ROOM TYPE (Without Heating)

Bahnson Co., Winston-Salem, N. C.
Comfort Products Corporation, Harvey, Ill.
Fairbanks, Morse & Co., Chicago.
General Air Conditioning Corp., Cincinnati.
Handelan Washed Air Co., Minneapolis.
Hotstream Heater Co., Cleveland.
Hugo Mfg. Co., Duluth, Minn.
Kauffman Air Conditioning Corp., St. Louis.
Lion Mfg. Corp., Chicago.
Lohman, Inc., Wm. J., Irvington, N. J.
Lowell Air Conditioning Corp., Philadelphia.
●Marley Company, Kansas City, Kansas.
Norwood Filtration Co., The, Florence, Mass.
Pfening Company, Fred D., Columbus, Ohio. (Industrial)
Skilbeck Mfg. Co., Kenosha, Wis.
Somers, Inc., H. J., Detroit.
Spray-Wheel Air Conditioners, Inc., Denver, Colo.
Standard Engineering Works, Pawtucket, R. I.
Steamair Co., Cincinnati, Ohio.
U. S. Air Conditioning Corp., Minneapolis, Minn.

HUMIDISTATS

American Moistening Co., Providence, R. I.
Au-Temp-Co Corp., New York City.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Bristol Co., Waterbury, Conn.
●Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md. (Human Hair)
H-B Instrument Co., Inc., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis. (Wood, Hair, Membrane)
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. (Human hair)
Parks-Cramer Co., Fitchburg, Mass.
●Penn Electric Switch Co., Goshen, Ind.
Powers Regulator Co., Chicago.
Standard Engineering Works, Pawtucket, R. I.
Tagliabue Mfg. Co., C. J., Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.
●White-Rodgers Electric Co., St. Louis.

HUMIDITY CONTROLS

See Humidistats

HUMIDITY RECORDERS

See Recorders, Humidity

HYGROMETERS

American Moistening Co., Providence, R. I.
American Schaeffer & Bundenberg Instrument Div., Manning, Maxwell & Moore, Inc., Bridgeport, Conn.
Bahnson Co., Winston-Salem, N. C.
Bristol Co., Waterbury, Conn.
Brown Instrument Co., Div. of Minneapolis-Honeywell Regulator Co., Philadelphia, Pa.
Fee and Stemwedel, Inc., Chicago.
Foxboro Co., Foxboro, Mass.
Friez & Sons, Julien P., Towson, Md.
G. M. Manufacturing Co., New York City.
H. B. Instrument Co., Inc., Philadelphia.
Hill, E. Vernon, Chicago.
International Moistening Co., Providence, R. I.
Johnson Service Co., Milwaukee, Wis.
Moeller Instrument Co., Richmond Hill, New York City.
Palmer Co., Cincinnati.
Parks-Cramer Co., Fitchburg, Mass.
Precision Thermometer and Instrument Co., Philadelphia.
Scientific Instrument Co., Detroit.
Standard Thermometer, Inc., Boston.
Tagliabue Mfg. Co., C. J., Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit.
Weksler Thermometer Corp., New York City.

INDICATORS, SOUND LEVEL

General Electric Co., Schenectady, N. Y.

INSULATING CEMENT

See Cement, Insulating

INSULATING WINDOWS, HEAT

See Windows, Heat Insulating

INSULATION, BUILDING

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (Rockwool)
Air-O-Cell Industries, Inc., Detroit.
Alfol Insulation Co., Inc., New York City. (Blanket)
Alton Mineral Wool Insulation Co., Alton, Ill.
Aluminum Company of America, Pittsburgh. (Reflective foil)
American Flange & Mfg. Co., Inc., New York City. (Metal Sheets)
American Hair & Felt Co., Chicago. (Hair)
Armstrong Cork Co., Lancaster, Pa. (Cork)
Bache & Co., Semon, New York City. (Glass)
Baldwin-Hill Co., Trenton, N. J. (Rockwool)
Barrett Division, Allied Chemical & Die Corporation, New York City. (Tar felt and rockwool)
Berry Jr. & Co., Inc., F. E., Everett, Mass.
●Blocksom & Company, Michigan City, Ind.
Canot, Inc., Samuel, Boston, Mass.
Carey Co., Philip, Lockland, Cincinnati, O. (Rock wool)
Carney Rockwool Co., Mankato, Minn. (Granulated, Loose, and Batt)
Celotex Corp., Chicago, Ill.

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Chamberlin Metal Weather Strip Co., Detroit. (Rock wool)
Coast Insulating Corp., Los Angeles. (Rockwool Batts, Fill)
Cork Import Corp., New York City. (Corkboard)
Cork Insulation Co., New York City. (Cork)
Doheny Co., John J., Belmont, Mass. (Blanket)
Dry-Zero Corporation, Chicago. (Blanket and Bound Batt)
Eagle-Picher Lead Co., Cincinnati, O. (Mineral wool)
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Fir-Tex Insulating Board Co., St. Helens, Ore. (Wood fibreboard)
Flintkote Co., New York City. (Fibre board and rockwool)
Ford Roofing Products Co., Chicago. (Board and rockwool)
General Insulating Products Co., Brooklyn, N. Y.
Hinde & Dauch Paper Co., Sandusky, O. (Air-Cell)
Insul-Wool Insulation Corp., Wichita, Kansas.
Insulite Div. Minnesota and Ontario Paper Co., Minneapolis, Minn. (Wood fibre)
International Vermiculite Co., Springfield, Ill. (Loose fill)
Jiffy Manufacturing Co., Hillside, N. J. (Blanket)
Johns-Manville, New York City. (Rock wool, fibre board)
Johnston Tin Foil & Metal Co., St. Louis. (Paper backed foil)
Keasbey Co., Robert A., New York City. (Rock wool)
Kennedy, Inc., David E., Brooklyn, N. Y. (Board)
Kimberly-Clark Corp., Chicago. (Expanding Blanket)
Ludowici-Celadon Co., Chicago. (Wool)
Marblehead Lime Co., Chicago. (Rock wool)
Masonite Corp., Chicago, Ill. (Sheathing, Lath, Tile, Plank, Blanket, Finish Panels)
Mineral Insulation Co., Chicago Ridge, Ill. (Rock wool)
Mitchell & Smith, Inc., Mineral Felt Div., Toledo, O. (Cork)
Multi-Cell Sales Corp., Minneapolis. (Used Newspaper Quilted)
Mundet Cork Corp., Brooklyn, N. Y. (Cork)
Munn and Steele, Inc., Newark, N. J. (Vermiculite)
National Gypsum Co., Buffalo, N. Y.
Nelson Mfg. Co., B. F., Minneapolis. (Vermiculite)
•Owens-Corning Fiberglas Corporation, Toledo. (Board and Blanket)
Pacific Lumber Co., San Francisco, Cal. (Loose fill)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Cal.
Plant Rubber & Asbestos Works, San Francisco.
Plastergon Wall Board Co., Buffalo. (Mineral Wool and Rigid Board)
Poe Co., C. W., Cleveland. (Mineral Wool)
Refractory & Insulation Corp., New York City. (Mineral wool, loose granulated)
Reynolds Metals Co., Inc., Richmond, Va. (Reflective)
Riverton Lime & Stone Co., Inc., Riverton, Va. (Mineral Wool)
Robinson Insulation Co., Great Falls, Mont. (Loose Fill)
Rock Fleece Co., El Paso, Texas. (Fill)
Ruberoid Co., New York City. (Rock wool)
Samson Plaster Board Co., Buffalo. (Fill, bats, blankets, foil, board)
Silvercote Products, Inc., Chicago. (Reflective fabric)
Specialty Converters, Inc., East Braintree, Mass. (Reflective)
Sprayo-Flake Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill. (Asbestos, hair-felt)
Standard Lime & Stone Co., Baltimore, Md. (Rock wool)
Standard Rolling Mills Incorporated, Brooklyn. (Reflective)
Tennessee Products Corp., Nashville, Tenn. (Mineral Wool)
Therminsul Corp. of America, Kalamazoo, Mich. (Bats, bulk, granulated)
Truscon Steel Co., Youngstown, O. (Board between metal sheets)
Union Rock Wool Corp., Wabash, Ind. (all types)
United Cork Companies, Kearney, N. J.
United States Gypsum Co., Chicago, Ill. (Wool and board)
United States Mineral Wool Co., Chicago. (Rock wool)
U. S. Rock Wool Co., Salt Lake City (Granulated, Batt and Blanket)
Universal Gypsum & Lime Co., Chicago. (Loose fill)
Universal Zonolite Insulation Co., Chicago. (Loose Fill, Plaster)
Upson Co., Lockport, N. Y. (Board)
Waukesha Lime & Stone Co., Waukesha, Wis. (Rock Wool batts and bulk)
Western Mineral Products Co., Omaha, Nebr. (Fill)
Western Rock Wool Corp., Huntington, Ind. (Fill)
Wilson & Co., Inc., Chicago, Ill. (Flexible, Blanket, Board)
•Wilson, Inc., Grant, Chicago, Ill. (Rock Wool)
Wood Conversion Co., St. Paul, Minn. (Board and blanket)

INSULATION, DUCT, SOUND DEADENING

American Hair & Felt Co., Chicago, Ill. (Hair Felt)
Baldwin-Hill Company, Trenton, N. J. (Rockwool, block)
Barrett Division, Allied Chemical & Die Corporation, New York City.
Berry, Jr., & Co., Inc., F. E., Everett, Mass.
Cabot, Inc., Samuel, Boston, Mass.
Carey Co., Philip, Lockland, Ohio.
Celotex Corp., Chicago, Ill.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Felters Co., Inc., Boston, Mass.
Insulite Div. Minnesota and Ontario Paper Co., Minneapolis.
Johns-Manville, New York City.
Keasbey Co., Robert A., New York City.
Kimberly-Clark Corp., Chicago, Ill.
Mortell Co., J. W., Kankakee, Ill. (Adhesive)
•Owens-Corning Fiberglas Corporation, Toledo. (Board and Blanket)
Pacific States Felt & Mfg. Co., Inc., San Francisco.
Plant Rubber & Asbestos Works, San Francisco.
Reynolds Metals Co., Inc., Richmond, Va.
Robinson Insulation Co., Great Falls, Mont.
Telsit Insulation Co., Bronx, N. Y. (Plastic)
Universal Zonolite Insulation Co., Chicago. (Cement)
Western Felt Works, Chicago, Ill.
Western Silicair Products, Inc., Burbank, Cal.
•Wilson, Inc., Grant, Chicago, Ill.

INSULATION, DUCT, THERMAL

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Air-O-Cel Industries, Inc., Detroit.
Alfol Insulation Co., Inc., New York City. (Aluminum foil)
American Flange & Mfg. Co., Inc., New York City.
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Baldwin-Hill Co., Trenton, N. J. (Blanket)
Barrett Division, Allied Chemical & Die Corporation, New York City. (Rock Wool)
Berry Jr. & Co., Inc., F. E., Everett, Mass.
Cabot, Inc., Samuel, Boston, Mass.
Carey Co., Philip, Lockland, Ohio.
Celotex Corp., Chicago, Ill.
Cork Import Corp., New York City. (Corkboard)
Cork Insulation Co., Inc., New York City. (Cork)
Dry-Zero Corporation, Chicago.
Eagle-Picher Lead Co., Cincinnati, O. (Mineral wool, block, blanket)
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Felters Co., Inc., Boston.
Fir-Tex Insulating Board Co., St. Helens, Ore.
General Insulating Products Co., Brooklyn.
Goodrich Company, B. F., Akron, Ohio.
Hinde & Dauch Paper Co., Sandusky, Ohio.
Insulite Div. Minnesota and Ontario Paper Co., Minneapolis.
International Vermiculite Co., Springfield, Ill. (Block)
Johns-Manville, New York City.
Keasbey Co., Robert A., New York City.
Keasbey & Mattison Co., Ambler, Pa. (85% Magnesia—Pipe, Corrugated and Blocks)
Kennedy, Inc., David E., Brooklyn, N. Y. (Cork)
Keystone Asphalt Products Co., Chicago.
Kimberly-Clark Corp., Chicago. (Expanding Blanket)
Masonite Corporation, Chicago.
Mineral Insulation Co., Chicago Ridge, Ill. (Rock wool)
Mitchell & Smith, Inc., Mineral Felt Div., Toledo, O. (Cork)
Mundet Cork Corp., Brooklyn, N. Y. (Cork)
Munn and Steele, Inc., Newark, N. J. (Plastic)
National Gypsum Co., Buffalo, N. Y.
Nelson Mfg. Co., B. F., Minneapolis.
Norristown Magnesia & Asbestos Co., Norristown, Pa.
•Owens-Corning Fiberglas Corp., Toledo, Ohio. (Board and Blanket)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Cal.
Plant Rubber & Asbestos Works, San Francisco.
Poe Co., C. W., Cleveland.
Quigley Company, Inc., New York City.
Refractory & Insulation Corp., New York City. (Inside Duct Lining)
Reynolds Metals Co., Inc., Richmond, Va.
Robinson Insulation Co., Great Falls, Mont.
Ruberoid Co., New York City. (Cellular)
•Sall Mountain Co., Chicago, Ill.
Schundler & Co., Inc., F. E., Joliet, Ill.
Smith & Kanzler Corp., Elizabeth, N. J.
Sprayo-Flake Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill.
Telsit Insulation Co., Bronx, N. Y.
Therminsul Corp., Kalamazoo, Mich. (Block rock wool)
United Cork Companies, Kearney, N. J.
United States Mineral Wool Co., Chicago. (Rockwool)
Universal Zonolite Insulation Co., Chicago. (Cement and Blocks)
Western Felt Works, Chicago, Ill.
Wilson & Co., Inc., Chicago, Ill. (Flexible, fire resisting)
•Wilson, Inc., Grant, Chicago, Ill.
Wood Conversion Co., St. Paul, Minn.

INSULATION, FURNACE

Acme Asbestos Covering & Flooring Co., Chicago.
Alfol Insulation Co., Inc., New York City.
Baldwin-Hill Co., Trenton, N. J. (Asbestos cement)
Carey Co., Philip, Lockland, Ohio.
Coast Insulating Corp., Los Angeles. (Rock Wool Cement)
Eagle-Picher Lead Co., Cincinnati, O. (Blocks)
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Green Fire Brick Company, A. P., Mexico, Mo. (Vermiculite)
International Vermiculite Co., Springfield, Ill. (Block-Cement)

• Advertisement in this issue. See Index to Advertisers, page 232

Johns-Manville, New York City. (85% Magnesia)
Keasbey Co., Robert A., New York City (Asbestos)
Krehbiel Co., J. H., Chicago. (Boiler and Breech Covering)
Mineral Insulation Co., Chicago Ridge, Ill. (Rock wool)
Mitchell & Smith, Inc., Mineral Felt Div., Toledo, O. (Rock Wool, Blocks)
Munn and Steele, Inc., Newark, N. J. (Bonding)
Nelson Mfg. Co., B., F., Minneapolis.
Norristown Magnesia & Asbestos Co., Norristown, Pa.
●Owens-Corning Fiberglas Corp., Toledo, O. (Blanket)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Cal.
Quigley Company, Inc., New York City
Refractory & Insulation Corp., New York City. (Block, Blanket)
Robinson Insulation Co., Great Falls, Mont. (High Temperature Cement)
Ruberoid Co., New York City. (Blocks, Asbestos Cement)
Schundler & Co., Inc., F. E., Joliet, Ill.
Smidth & Co., F. L., New York City.
Smith & Kanzler Corp., Elizabeth, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Telsit Insulation Co., Bronx, N. Y.
Therminsul Corp., Kalamazoo, Mich. (Block rock wool.)
United States Mineral Wool Co., Chicago.
Universal Zonolite Insulation Co., Chicago. (Cement, Bricks and blocks)
●Wilson, Inc., Grant, Chicago, Ill.

KITCHEN FANS

See Fans, Kitchen

LACQUERS

See Enamels and Lacquers

LEADER STRAPS

See Fittings and Accessories, Conductor

LIFTS, SKYLIGHT

Biersach & Niedermeyer Company, Milwaukee.
Cincinnati Sheet Metal & Roofing Co., Cincinnati.
Dayton Greeenhouse Mfg. Co., Dayton, O.
Levow, David, New York City. (Gearing)
Main Cornice Works, Los Angeles, Cal.
Park City Cornice Works, Inc., Bridgeport, Conn.
Royal-Apex Mfg. Corp., Brooklyn, N. Y.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Van Noorden Co., E., Boston, Mass.
Weiss & Co., H., New York City.

LIGHTERS, FURNACE FIRE

American Furnace Lighter Sales Co., St. Louis.

LOUVRES AND SHUTTERS, AUTOMATICALLY OR MANUALLY CONTROLLED

Air Conditioning Products Co., Detroit.
●Air Control Products, Inc., Coopersville, Mich.
Air Controls, Inc., Cleveland.
Air Conditioning Products Co., Detroit, Mich.
Airecon Industries Incorporated, Detroit.
Airmaster Corp., Chicago, Ill.
●Allen Corp., Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo, O.
Ames Co., W. R., San Francisco, Cal.
Arex Co., Chicago, Ill.
Autovent Fan & Blower Div., Herman Nelson Corporation, Chicago.
Barber-Colman Company, Rockford, Ill.
Belanger Fan & Blower Co., Detroit.
Belco Exhaust Fan Mfg. Co., St. Louis.
Bishop & Babcock Mfg. Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Campbell Heating Co., E. K., Kansas City, Mo.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Chicago Metal Mfg. Co., Chicago, Ill.
Circulators & Devices Mfg. Corp., New York City. (Automatic and Manual)
Clay Equipment Corp., Cedar Falls, Ia.
Dual-Air Fan Corporation, Chicago.
Economy Electric Manufacturing Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago.
●Elgo Shutter & Mfg. Co., Detroit, Mich.
Gillian Mfg. Co., Detroit.
Guth Co., Edwin F., St. Louis.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
International Engineering, Inc., Dayton, O.
International Steel Company, Evansville, Ind.
Jamieson Mfg. Co., Dallas, Tex.
Johnson Fan & Blower Corp., Chicago, Ill.
Johnston Co., Wm. W., Dayton, O.
Jordan & Co., Paul R., Indianapolis, Ind.
Kelvin-White Co., Boston, Mass.
King Ventilating Co., Owatonna, Minn.
Kirk & Blum Mfg. Co., Cincinnati, O.
Leslie Welding Co., Chicago.
Lockjoint Wood Products Co., Wichita, Kan. (Wood; stationary door, wall, window and ceiling)
Lohman, Inc., William J., Irvington, N. J.
Martin Metal Mfg. Co., Wichita, Kan.
Meier Electric & Machine Co., Indianapolis, Ind.
Meyer Mfg. Co., Detroit, Mich.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Myers Electric Co., Pittsburgh, Pa.
Peerless Electric Co., Warren, Ohio.
Reed Unit-Fans, Inc., New Orleans, La.
Richmond Fireproof Door Company, Richmond, Ind.
Riggin Metal Products, Inc., Kankakee, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
Schoedinger, F. O., Columbus, O.
Signal Electric Mfg. Co., Menominee, Mich.
●Standard Stamping & Perforating Co., Chicago.
●Sturtevant Company, B. F., Hyde Park, Boston, Mass.
Supreme Heater & Ventilating Corp., St. Louis.
●Tuttle & Bailey, Inc., New Britain, Conn.
●United States Register Co., Battle Creek, Mich.
Utility Fan Corporation, Los Angeles, Cal.
Van Noorden Co., E., Boston, Mass.
Victor Electric Products, Inc., Cincinnati, Ohio.
Waterloo Register Co., Waterloo, Ia.

LOUVERS AND SHUTTERS, MOTOR OPERATED

Air Conditioning Products Co., Detroit.

MACHINERY, REBUILT AND USED

Biggs Supply Co., B. C., Lincoln, Nebr.
●Central-West Machinery Co., Chicago.
●General Blower Co., Chicago.
●Interstate Machinery Co., Inc., Chicago, Ill.
Maplewood Machinery Co., Inc., Chicago, Ill.
●Osborn Co., J. M. & L. A., Cleveland, O.
St. Louis Tool Co., St. Louis.

MACHINES, BAR FOLDERS, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
St. Louis Tool Co., St. Louis.

MACHINES, BAR FOLDERS, POWER

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, BEADING, HAND

●Niagara Machine & Tool Works, Buffalo.
Packham Crimper Co., Mechanicsburg, Ohio.
●Peck, Stow & Wilcox Co., Southington, Conn.
Robertson, F. L., Buffalo, N. Y.

MACHINES, BEADING, POWER

Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.
Swain Mfg. Co., Fred J., St. Louis.

MACHINES, BURRING, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, BURRING, POWER

Cincinnati Electrical Tool Co., The, Cincinnati, O.
Independent Pneumatic Tool Co., Chicago.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Stow Mfg. Co., Binghamton, N. Y.

MACHINES, CLEAT BENDING, HAND

●Smith, R. E., Waukegan, Ill.

MACHINES, COMBINATION, HAND

(Beading, Burring, Turning, Wiring, etc.)

Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
Packham Crimper Co., Mechanicsburg, Ohio. (Beading-Rotary Snips)
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, COMBINATION, POWER

(Beading, Burring, Turning, Wiring, etc.)

Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.

MACHINES, CRIMPING, HAND

●Niagara Machine & Tool Works, Buffalo.
Packham Crimper Co., Mechanicsburg, Ohio.
●Peck, Stow & Wilcox Co., Southington, Conn.
Service Machine Co., Elizabeth, N. J.

MACHINES, CRIMPING, POWER

Maplewood Machinery Co., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, DOUBLE SEAMER, ROOF, POWER

Maxfield Manufacturing Co., Temple, Tex.
●Niagara Machine & Tool Works, Buffalo, N. Y.

MACHINES, ELBOW, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, ELBOW, POWER

Maplewood Machinery Co., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
●Whitney Metal Tool Co., Rockford, Ill.

MACHINES, FLANGING, HAND

Binkley Mfg. Co., Warrenton, Mo.
●Lockformer Co., Chicago.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
"Original" Metal Flanging Machine Works, Seattle, Wash.
Packham Crimper Co., Mechanicsburg, Ohio.
●Peck, Stow & Wilcox Co., Southington, Conn.
Ward Machinery Co., Chicago, Ill.
Weiss & Co., H., New York City.

MACHINES, FLANGING, POWER

Bittner Engineering Co., New York City.
Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Engineering and Research Corporation, Riverdale, Md.
●Lockformer Co., Chicago.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.
Swain Mfg. Co., Fred J., St. Louis.

MACHINES, GROOVING, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, GROOVING, POWER

Maplewood Machinery Co., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, GUTTER FORMING, HAND

Robertson, F. L., Buffalo, N. Y.

MACHINES, NIBBLING, HAND

National Machine Tool Co., Racine, Wis.

MACHINES, NIBBLING, POWER

Campbell, Andrew C., Div. of American Chain & Cable Co., Inc., Bridgeport, Conn.
Independent Pneumatic Tool Co., Chicago. (Portable)
●Libert Machine Co., Green Bay, Wis.
St. Louis Tool Co., St. Louis.
Savage Co., W. J., Knoxville, Tenn.

MACHINES, PIPE, LOCK FORMING, POWER

Maplewood Machinery Co., Chicago.

MACHINES, PITTSBURGH LOCK FORMING

Binkley Mfg. Co., Warrenton, Mo.
●Lockformer Co., Chicago, Ill.
Maplewood Machinery Co., Inc., Chicago.
Rafter Machine Co., Belleville, N. J.
●Whitney Metal Tool Co., Rockford, Ill.

MACHINES, PITTSBURGH LOCK OPENERS

Atlas Machine & Tool Co., Portland, Ore.
Maplewood Machinery Co., Chicago.

MACHINES, ROLLING, CRIMPING, BEADING, POWER

Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo, N. Y.

MACHINES, SEAMING, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Weiss & Co., H., New York City.

MACHINES, SEAMING, POWER

Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Maplewood Machinery Co., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Swain Mfg. Co., Fred J., St. Louis.

MACHINES, SETTING DOWN, HAND

●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, SETTING DOWN, POWER

Callahan Can Machine Co., Inc., Brooklyn, N. Y.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, SHEET METAL SHRINKING, POWER

Engineering and Research Corporation, Riverdale, Md.

MACHINES, SLIP ROLL FORMING, HAND

Bertsch & Co., Cambridge City, Ind.
Hendley & Whittemore Co., Beloit, Wis.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, SLIP ROLL FORMING, POWER

Bertsch & Co., Cambridge City, Ind.
Hendley & Whittemore Co., Beloit, Wis.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, SLITTING, HAND

Bertsch & Co., Cambridge City, Ind.
●Beverly Shear Co., Chicago.
Buffalo Forge Co., Buffalo.
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rafter Machine Co., Belleville, N. J.
Service Machine Co., Elizabeth, N. J.
Ward Machinery Co., Chicago, Ill.

MACHINES, SLITTING, POWER

Bertsch & Co., Cambridge City, Ind.
Buffalo Forge Co., Buffalo.
Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Hendley & Whittemore Co., Beloit, Wis.
●Libert Machine Co., Green Bay, Wis. (Rotary)
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.
Rafter Machine Co., Belleville, N. J.
St. Louis Tool Co., St. Louis.
Yoder Co., Cleveland, O.

MACHINES, SQUARING, POWER

Bertsch & Company, Cambridge City, Ind.
●Peck, Stow & Wilcox Co., Southington, Conn.
●Whitney Metal Tool Company, Rockford, Ill. (Shear)

MACHINES, WIRING, HAND

Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.

MACHINES, WIRING, POWER

Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.
Yoder Company, Cleveland, O.

MALLETS, METAL WORKING

Allen, Inc., Charles I., Pequabuck, Conn. (Hickory and Lignum Vitae)
Bernz Company, Inc., Otto, Rochester, N. Y. (Dogwood)
Bersted Co., Martin, Chicago, Ill. (Molded composition)
Chicago Rawhide Mfg. Co., Chicago, Ill.
●Densewood Corporation, Elkhorn, Wis. (Wood)
Electric Materials Co., North East, Pa. (Copper)
Goodrich Company, B. F., Akron, Ohio. (Rubber)
Greene, Tweed & Co., New York City.
Lignum-Vitae Products Corp., Jersey City, N. J.
Maplewood Machinery Co., Chicago. (Wood)
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn. (Wood)
Reiner & Campbell Co., Inc., Elizabeth, N. J.
Stanley Tools, New Britain, Conn. (Soft face hammers)
Stossel & Sons Co., Carl, Front Royal, Va.
Warren Handle Works Co., Cortland, Ohio.

MATS, FOR EVAPORATIVE COOLERS

Adams Mattress Factory, Fort Worth, Texas.
Air-O-Line Co., Dallas, Texas. (Aspen Fiber)
American Excelsior Corp., Chicago.
Essick Manufacturing Company, Los Angeles. (Bronze Wool, Aspen Fiber, Redwood Excelsior)
Eugene Excelsior Company, Eugene, Oregon.
Grainger, Inc., W. W., Chicago. (Aspen Fiber)
Levy Bros. Company, Los Angeles.
Morey, Dan, Los Angeles.
Palmer Manufacturing Corp., Phoenix, Ariz. (Aspen Fiber)

METAL CEILINGS

See Ceilings, Metal

METAL HOSE

See Hose, Metal

METAL PROTECTING

See Paint, Metal Protecting

METAL SPRAY GUNS

See Guns, Spray, Metals

METAL STAMPINGS

See Stampings, Metal

METALS, PERFORATED, SHEET AND PLATE

Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Perforating Co., Chicago Ill.
Cross Engineering Co., Carbondale, Pa.
Crucible Steel Co. of America, New York City.
Diamond Manufacturing Co., Wyoming, Pa.
Erdle Perforating Co., Rochester, N. Y.
Gillian Mfg. Co., Detroit.
●Harrington & King Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Carbondale, Pa.
International Nickel Co., Inc., New York City. (Monel and nickel)
Johnston & Chapman Co., Chicago, Ill.
Littleford Bros., Inc., Cincinnati, O.
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
Martin Metal Mfg. Co., Wichita, Kan.
Mundt & Sons, Charles, Jersey City, N. J.
Nortmann-Duffke Co., Milwaukee Wis.
Reliable Perforating Co., Chicago, Ill.
Revere Copper and Brass Incorporated, New York City.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
●Standard Stamping & Perforating Co., Chicago, Ill.
Wickwire Spencer Steel Co., New York City.

METERS, AIR VELOCITY, DIRECT READING

Detroit Air Conditioning Service Co., Inc., Detroit.
Friez & Sons, Julien P., Towson, Md.
Hill, E. Vernon, Chicago.
●Illinois Testing Laboratories, Inc., Chicago, Ill.
Taylor Instrument Companies Rochester, N. Y.

MOTORS, DAMPER, DUCT, MODULATING OR PROPORTIONING

Au-Temp-Co Corp., New York City.
Automatic Temperature Control Co., Inc., Philadelphia.
Barber-Colman Co., Rockford, Ill.
Cook Electric Company, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Russell Electric Co., Chicago, Ill.
●White Manufacturing Co., St. Paul, Minn.

MOTORS, DAMPER, DUCT, TWO-POSITION

Au-Temp-Co. Corp., New York City.
●Automatic Products Co., Milwaukee, Wis.
Automatic Temperature Control Co., Inc., Philadelphia.
Barber-Colman Co., Rockford, Ill.
Cook Electric Co., Chicago, Ill.
Friez & Sons, Julien P., Towson, Md.
●Mercoid Corp., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Russell Electric Co., Chicago.
Sampsel Time Control, Inc., Spring Valley, Ill.
●White Manufacturing Co., St. Paul, Minn.

MOTORS, DAMPER, FURNACE DRAFT, ELECTRICAL

Au-Temp-Co. Corp., New York City.
●Automatic Products Co., Milwaukee, Wis.
Barber-Colman Co., Rockford, Ill.
Barclay, Inc., Robert, Chicago.
Cook Electric Co., Chicago.
Crise Electric Mfg. Co., Columbus, Ohio.
Defender Automatic Regulator Co., St. Louis.
Friez & Sons, Julien P., Bendix Aviation Corp., Towson, Md.
●General Controls Co., Glendale, Cal.
Gleason-Avery, Inc., Auburn, N. Y.
●Mercoid Corp., Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Pioneer-Heat Regulator Division, Master Electric Co., Dayton, O.
Russell Electric Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Spencer Thermostat Company, Attleboro, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis.

MOTORS, ELECTRIC, FRACTIONAL H. P.

Baldor Electric Co., St. Louis, Mo.
Barber-Colman Co., Rockford, Ill. (A. C.)
Bodine Electric Co., Chicago, Ill.
Brown-Brockmeyer Co., Inc., Dayton, O
Canatsey Electric Mfg. Co., Kansas City, Mo.
●Century Electric Co., St. Louis, Mo.
Delco Appliance Div. General Motors Corp., Rochester, N. Y.
Delco Products Dvision, General Motors Corp., Dayton, O.
Diehl Mfg. Co., Elizabethport, N. J.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fairbanks, Morse & Co., Chicago.
General Electric Co., Schenectady, N. Y.
Holtzer-Cabot Electric Co., Boston, Mass.
Howell Electric Motors Co., Howell, Mich.
Janette Mfg. Co., Chicago, Ill.
Leland Electric Co., Inc., Dayton, O.
Marathon Electric Mfg. Corp., Wausau, Wis.
Master Electric Co, Dayton, O
Ohio Electric Mfg. Co., Cleveland, O.
Peerless Electric Co., Warren, O.
Reynolds Electric Company, Chicago.
Robbins & Myers, Inc., Springfield, O.
Russell Electric Co., Chicago.
Small Motors, Inc., Chicago.
Speedway Mfg. Co., Cicero, Ill.
Star Electric Motor Co., Bloomfield, N. J.
Sterling Electric Motors. Inc., Los Angeles.
●Sturtevant Co., B. F., Hyde Park, Boston.
U. S. Electrical Motors, Inc., Los Angeles.
Victor Electric Products, Inc., Cincinnati.
●Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MOTORS, ELECTRIC, 1 H. P. AND OVER

Allis-Chalmers Mfg. Co., Milwaukee, Wis
Allis Co., Louis, Milwaukee, Wis.
Baldor Electric Co., St. Louis, Mo.

Bogue Electric Co., Paterson, N. J.
Brown-Brockmeyer Co., Inc., Dayton, O.
Burke Electric Co., Erie, Pa.
Canatsey Electric Mfg. Co., Kansas City, Mo.
•Century Electric Co., St. Louis, Mo.
Continental Electric Co., Inc., Newark, N. J.
Crocker-Wheeler Elec. Mfg. Co., Ampere, N. J.
Delco Products Division, General Motors Corp., Dayton, O.
Diehl Mfg. Co., Elizabethport, N. J.
Electric Machinery Mfg. Co., Minneapolis.
Emerson Electric Mfg. Co., St. Louis.
Fairbanks, Morse & Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Howell Electric Motors Co., Howell, Mich.
Ideal Electric & Mfg. Co., Mansfield, O.
Imperial Electric Co., Akron, O.
Janette Mfg. Co., Chicago, Ill.
Leland Electric Co., Inc., Dayton, Ohio.
Marathon Electric Mfg. Corp., Wausau, Wis.
Marble-Card Electric Co., Gladstone, Mich.
Master Electric Co., Dayton, O.
Peerless Electric Co., Warren, O.
Philadelphia Gear Co., Philadelphia. (Geared)
Reliance Elec. & Eng. Co., Cleveland.
Robbins & Myers, Inc., Springfield, O.
Star Electric Motor Co, Bloomfield, N. J.
Sterling Electric Motors, Inc., Los Angeles.
•Sturtevant Co., B. F., Hyde Park, Boston.
U. S. Electrical Motors, Inc., Los Angeles.
•Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MOTORS, TIMING

Automatic Temperature Control Co., Inc., Philadelphia.
•Hansen Mfg. Co., Inc., Princeton, Ind.
•Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Paragon Electric Co., Chicago.
•Penn Electric Switch Co., Goshen, Ind.

MOULDING AND TRIM, ORNAMENTAL, for CABINETS and CASINGS

Alden Manufacturing Co., Painesville, O.
Alimetal Weatherstrip Co., Chicago, Ill.
Aluminum Co. of America, Pittsburgh, Pa.
Aluminum Goods Mfg. Co., Manitowoc, Wis.
Brasco Manufacturing Co., Harvey, Ill.
Briggs Mfg. Co., Detroit.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Detroit Moulding Div., Detroit.
Empire Door Co., Inc., New York City.
Extruded Plastics, Inc., Norwalk, Conn.
Friedley-Voshardt Co., Chicago, Ill.
Green Mfg. Co., Chicago.
Herron-Zimmers Moulding Co., Detroit, Mich.
Jamestown Metal Corp., Jamestown, N. Y.
Kawneer Co., Niles, Mich.
Ladon Co., Chicago.
Lau Blower Co., Dayton, O.
Ledkote Products Co., Long Island City, N. Y.
Lees, John, Div. Serrick Corp., Muncie, Ind.
Martin-Parry Corp., York, Pa.
Maysteel Products, Inc., Mayville, Wis.
Mesker & Co., Geo. L., Evansville, Ind.
•Miller & Doing, Inc., Brooklyn, N. Y.
Pyramid Metals Company, Chicago, Ill.
United Metal Prod. Div., Canton, Ohio.
United States Stoneware Co., Akron, Ohio, and New York City.
Werner Co., Inc., R. D., New York City. (Plastic)

MOULDINGS, METAL, FOR SUBSTITUTE DUCTS

•Sheet Lock Co., Chicago.

MOULDINGS, WOOD, FOR SUBSTITUTE DUCTS

•Klomparens Lock-Joint Co., Arlington, Va.

NAILS, ALUMINUM

Aluminum Company of America, Pittsburgh, Pa.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Hassall, Inc., John, Brooklyn, N. Y.
Townsend Co., New Brighton, Pa.

NAILS, COPPER

American Steel & Wire Co., Cleveland.
Angell Nail & Chaplet Co., Cleveland, O.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Clendenin Brothers, Inc., Baltimore.
Columbia Steel Co., San Francisco, Cal.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Columbia Steel Co., San Francisco, Cal.
Copperweld Steel Co., Glassport, Pa.
Downs-Smith Brass & Copper Co., New York City.
Hassall, Inc., John, Brooklyn, N. Y.
•Hussey & Co., C. G., Pittsburgh, Pa.
Maze Co., W. H., Peru, Ill.
Townsend Co., New Brighton, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.

NAILS, HARDENED MASONRY

American Steel & Wire Co., Cleveland.
•Parker-Kalon Corp., New York City.
Rawlplug Co., Inc., New York City.
Townsend Co., New Brighton, Pa.
Tremont Nail Co., Wareham, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.

NAILS, ROOFING

American Steel & Wire Co., Cleveland.
Angell Nail & Chaplet Co., Cleveland, O.
Berger Mfg. Div. of Republic Steel Corp., Canton, O.
•Bethlehem Steel Co., Bethlehem, Pa.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Columbia Steel Co., San Francisco, Cal.
Conklin Brass & Copper Co., Inc., T. E., New York City. (Copper)
•Continental Steel Corp., Kokomo, Ind.
Deniston Co., Chicago, Ill.
Dickson Weatherproof Nail Co., Evanston, Ill. (Lead headed)
Downs-Smith Brass & Copper Co., New York City.
Edwards Mfg. Co., Inc., Cincinnati, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Hassall, Inc., John, Brooklyn, N. Y.
•Hussey & Co., C. G., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Malleable Iron Fittings Co., Branford, Conn.
Maze Co., W. H., Peru, Ill.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.
Republic Steel Corp., Cleveland, O.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Townsend Co., New Brighton, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

NAILS, SCREW, HARDENED

Jones & Laughlin Steel Corp., Pittsburgh.
National Screw & Mfg. Co., Cleveland, O.
•Parker-Kalon Corp., New York City.
Republic Steel Corp., Cleveland, O.
Townsend Co., New Brighton, Pa.

NAILS, STAINLESS STEEL

Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Hassall, Inc., John, Brooklyn, N. Y.
National Screw & Mfg. Co., Cleveland.
Republic Steel Corp., Cleveland, O.
Townsend Co., New Brighton, Pa.
Tremont Nail Company, Wareham, Mass.
Turner & Seymour Mfg. Co., Torrington, Conn.

NAILS, ZINC COATED

American Steel & Wire Co., Cleveland.
American Zinc Products Co., Greencastle, Ind.
Angell Nail & Chaplet Co., Cleveland, O.
Berger Mfg. Div. of Republic Steel Corp., Canton, O.
•Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Cal.
•Continental Steel Corp., Kokomo, Ind.
Hassall, Inc., John, Brooklyn, N. Y.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Malleable Iron Fittings Co., Branford, Conn.
Maze Co., W. H., Peru, Ill.
Republic Steel Corp., Cleveland, O.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Townsend Co., New Brighton, Pa.
Tremont Nail Co., Wareham, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

NAME PLATES

See Hardware, for Cabinets and Casings

NIBBLERS

See Machines, Nibbling

NIGHT AIR FANS

See Fans, Night Air Cooling

NOZZLES, SPRAY, WATER

American Cooling Tower Co., Kansas City, Mo.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
April Showers Company, Washington, D. C.
Bahnson Co., Winston-Salem, N. C.
Ballioffett Dies & Nozzle Co., Inc., Guttenberg, N. J.
Benjamin Air Rifle Co., St. Louis.
Betz Air Conditioning Corp., Kansas City, Mo.

Binks Mfg. Co., Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
●Clarage Fan Co., Kalamazoo, Mich.
Eclipse Air Brush Co., Inc., Newark, N. J.
Hubbard Company, Minneapolis.
Link-Belt Co., Chicago.
McDonnell & Miller, Chicago.
●Marley Co., Kansas City, Kan.
Martocello & Co., Jos. A., Philadelphia, Pa.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
National Engineering & Manufacturing Co., Kansas City, Mo.
Phillips Cooling Tower Co., Inc., New York City.
Rega Mfg. Co., Rochester, N. Y.
Spray Engineering Co., Somerville, Mass.
Spraying Systems Co., Chicago, Ill.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
Strandwitz & Co., Inc., W. J., Camden, N. J.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Supreme Electric Products Corp., Rochester, N. Y.
Water Cooling Corp., New York City.
Yarnall-Waring Company, Philadelphia.

NUTS, SHEET METAL

Tinnerman Products, Inc., Cleveland.

ODOR ADSORBERS

See Adsorbers, Odor

OFFSETS, FURNACE PIPE

See Fittings and Accessories, Furnace Pipe

OIL BURNERS

See Burners, Oil

ORNAMENTS, SHEET METAL

See Mouldings and Trim, Ornamental

OXY-ACETYLENE WELDING EQUIPMENT

See Welding Equipment, Oxy-Acetylene

OZONE APPARATUS

Automatic Pump & Softener Corp., Rockford, Ill.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Electroaire Corp., Chicago, Ill.
Lohman, Inc., Wm. J., Irvington, N. J.
Montgomery Bros., San Francisco, Cal.
Norwood Filtration Co., The, Florence, Mass.
Ozone Air Company, Grand Rapids, Mich.
Ozo-Ray Process Corp., Chicago.
Russell Electric Company, Chicago.
Sealkote Corp., Chicago, Ill.
United States Ozone Co. of America, Scottdale, Pa.

PAINT, ALUMINUM

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Co., Cleveland, O.
●Allen Co., Inc., L. B., Chicago.
Aluminum Company of America, Pittsburgh, Pa.
American-Marietta Company, Chicago.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baer Brothers, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carter Paint Co., Liberty, Ind.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, O.
Cork Import Corp., New York City.
Detroit Graphite Company, Detroit.
Dragert Co., Inc., C. H., Brooklyn, N. Y.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Flood Company, Cleveland.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co. Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Inter-Coastal Paint Co., East St. Louis, Ill.
Iowa Paint Mfg. Co., Des Moines, Ia.
Koppers Co., Pittsburgh, Pa.
Krehbiel Co., J. H., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Maas & Waldstein Co., Newark, N. J.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Co., South Bend, Ind.
Pittsburgh Plate Glass Company, Pittsburgh.
Presstite Engineering Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City. (Vehicle only)
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sherwin-Williams Co., Cleveland
Sipe & Company, James B., Pittsburgh.
Technical Coatings, Inc., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.
Wilson Company, Ludwig, Chicago.

PAINT, CONCRETE, WATERPROOFING

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Company, Cleveland.
American-Marietta Company, Chicago.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baer Brothers, New York City.
Barber Asphalt Corp., Barber, N. J.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co. Philadelphia, Pa.
Coddington Manufacturing Co., E. D., Milwaukee.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, Ohio.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Flintkote Co., New York City.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia.
Koppers Co., Pittsburgh, Pa.
Lastik Products Co., Inc., Pittsburgh, Pa.
Lehon Co., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Co., South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago, Ill.
Paint-Point Corp., Newark, N. J.
Pecora Paint Co., Philadelphia, Pa.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Pyrolite Products Co., Cleveland, O.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Self-Vulcanizing Rubber Co., Inc., Chicago, Ill.
Sherwin-Williams Co., Cleveland.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Co., Chicago, Ill.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Toch Brothers, Inc., Elm Park, Staten Island, N. Y.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit, Mich.
U. S. Gutta Percha Paint Co., Providence, R. I.
United States Gypsum Co., Chicago, Ill.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Wilhelm Co., A., Reading Pa.

PAINT, COPPER

Acme White Lead & Color Works, Detroit.
Baer Brothers, New York City.
Debevoise Co., Brooklyn, N. Y.
Glidden Company, Cleveland.
Lucas & Company, Inc., John, Philadelphia.
Pittsburgh Plate Glass Co., Pittsburgh.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh, Pa.
Stokes, Jr., J. W., Brooklyn, N. Y.
U. S. Gutta Percha Paint Co., Providence, R. I.

PAINT, CRACKLE FINISH

Acme White Lead & Color Works, Detroit.
Baer Brothers, New York City.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn.
Inter-Coastal Paint Co., East St. Louis, Ill.
Iowa Paint Mfg Co., Des Moines, Ia.
Lucas & Company, Inc., John, Philadelphia.
Maas & Waldstein Co., Newark, N. J.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sanvin Chemical Products Co., Moline, Ill.
Sherwin-Williams Co., Cleveland.
Wattenamel Co., Summit, Ill.
Zapon-Brevolite Division, Atlas Powder Co., North Chicago, Ill.

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PAINT, HOT SURFACES

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Co., Cleveland, O.
•Allen Co., Inc., L. B., Chicago.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Baer Brothers, New York City.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co. Philadelphia, Pa.
Carey Co., Philip, Lockland, Ohio.
Carter Paint Co., Liberty, Ind.
Continental Products Co., Euclid, Ohio.
Dampney Co. of America, Hyde Park, Boston, Mass.
Devoe & Raynolds Co., Inc., New York City.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hetzel Roofing Products Co., Newark, N. J.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia.
Krehbiel Co., J. H., Chicago.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Lastik Products Co., Inc., Pittsburgh, Pa.
Lucas & Company, Inc., John, Philadelphia.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland.
National Engineering Products, Inc., Washington, D. C.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Co., South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago, Ill.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Pyrolite Products Co., Cleveland, O.
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sauereisen Cements Co., Sharpsburg, Pa.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh.
Technical Coatings, Inc., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit, Mich.
U. S. Gutta Percha Paint Co., Providence, R. I.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Westinghouse Electric & Manufacturing Co., East Pittsburgh.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, FINISH COAT, BRUSH APPLIED

Acme White Lead & Color Works, Detroit.
American-Marietta Company, Chicago.
Barrett Division, Allied Chemical & Dye Corp., New York City.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Heath & Milligan Mfg. Co., Chicago.
Horn Company, A. C., Long Island City, N. Y.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
Midland Paint & Varnish Co., Cleveland. (Red)
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
North American Fibre Products Co., Cleveland.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sanvin Chemical Products Co., Moline, Ill.
Sherwin-Williams Co., Cleveland, Ohio.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Toch Brothers, Inc., Elm Park, S. I., N. Y.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron, O., and New York City.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, FINISH COAT, SPRAY APPLIED

Acme White Lead & Color Works, Detroit.
American-Marietta Company, Chicago.
Barrett Division, Allied Chemical & Dye Corp., New York City.
Carter Paint Company, Liberty, Indiana.
Cheesman-Elliot Co., Inc., Brooklyn, N. Y.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Fales Chemical Co., Inc., New York City.
Heath & Milligan Mfg. Co., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
Midland Paint & Varnish Co., Cleveland. (Graphite)
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sanvin Chemical Products Co., Moline, Ill.
Sauereisen Cements Co., Sharpsburg, Pa.
Sherwin-Williams Co., Cleveland, Ohio.
Sipe & Company, James B., Pittsburgh.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Company, Providence, R. I.
U. S. Stoneware Company, Akron, O., and New York City.
Wilson Company, Ludwig, Chicago.
Zapon Div., Atlas Powder Co., North Chicago, Ill.

PAINT, METAL PROTECTING, PRIME COAT, BRUSH APPLIED

Acme White Lead & Color Works, Detroit.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Carey Mfg. Co., Philip, Lockland, Ohio.
Carter Paint Company, Liberty, Ind.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Flood Company, Cleveland.
Heath & Milligan Mfg. Co., Chicago.
Horn Company, A. C., Long Island City, N. Y.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
National Engineering Products, Inc., Washington, D. C.
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sherwin-Williams Co., Cleveland, Ohio.
Sipe & Company, James B., Pittsburgh.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron Ohio, and New York City.
Wailes Dove-Hermiston Corporation, Westfield, N. J.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, PRIME COAT, SPRAY APPLIED

Acme White Lead & Color Works, Detroit.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Carey Mfg. Co., Philip, Lockland, Ohio.
Carter Paint Company, Liberty, Indiana.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Flood Company, Cleveland.
Heath & Milligan Mfg. Co., Chicago.
Hilo Varnish Corporation, Brooklyn.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
National Engineering Products, Inc., Washington, D. C.
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Company, South Bend, Indiana.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland, Ohio.

• Advertisement in this issue. See Index to Advertisers, page 252

Binks Mfg. Co., Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
●Clarage Fan Co., Kalamazoo, Mich.
Eclipse Air Brush Co., Inc., Newark, N. J.
Hubbard Company, Minneapolis.
Link-Belt Co., Chicago.
McDonnell & Miller, Chicago.
●Marley Co., Kansas City, Kan.
Martocello & Co., Jos. A., Philadelphia, Pa.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
National Engineering & Manufacturing Co., Kansas City, Mo.
Phillips Cooling Tower Co., Inc., New York City.
Rega Mfg. Co., Rochester, N. Y.
Spray Engineering Co., Somerville, Mass.
Spraying Systems Co., Chicago, Ill.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
Strandwitz & Co., Inc., W. J., Camden, N. J.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Supreme Electric Products Corp., Rochester, N. Y.
Water Cooling Corp., New York City.
Yarnall-Waring Company, Philadelphia.

NUTS, SHEET METAL

Tinnerman Products, Inc., Cleveland.

ODOR ADSORBERS

See Adsorbers, Odor

OFFSETS, FURNACE PIPE

See Fittings and Accessories, Furnace Pipe

OIL BURNERS

See Burners, Oil

ORNAMENTS, SHEET METAL

See Mouldings and Trim, Ornamental

OXY-ACETYLENE WELDING EQUIPMENT

See Welding Equipment, Oxy-Acetylene

OZONE APPARATUS

Automatic Pump & Softener Corp., Rockford, Ill.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Electroaire Corp., Chicago, Ill.
Lohman, Inc., Wm. J., Irvington, N. J.
Montgomery Bros., San Francisco, Cal.
Norwood Filtration Co., The, Florence, Mass.
Ozone Air Company, Grand Rapids, Mich.
Ozo-Ray Process Corp., Chicago.
Russell Electric Company, Chicago.
Sealkote Corp., Chicago, Ill.
United States Ozone Co. of America, Scottdale, Pa.

PAINT, ALUMINUM

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Co., Cleveland, O.
●Allen Co., Inc., L. B., Chicago.
Aluminum Company of America, Pittsburgh, Pa.
American-Marietta Company, Chicago.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baer Brothers, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carter Paint Co., Liberty, Ind.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, O.
Cork Import Corp., New York City.
Detroit Graphite Company, Detroit.
Dragert Co., Inc., C. H., Brooklyn, N. Y.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Flood Company, Cleveland.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co. Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Inter-Coastal Paint Co., East St. Louis, Ill.
Iowa Paint Mfg. Co., Des Moines, Ia.
Koppers Co., Pittsburgh, Pa.
Krehbiel Co., J. H., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Maas & Waldstein Co., Newark, N. J.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Co., South Bend, Ind.
Pittsburgh Plate Glass Company, Pittsburgh.
Presstite Engineering Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City. (Vehicle only)
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sherwin-Williams Co., Cleveland
Sipe & Company, James B., Pittsburgh.
Technical Coatings, Inc., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.
Wilson Company, Ludwig, Chicago.

PAINT, CONCRETE, WATERPROOFING

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Company, Cleveland.
American-Marietta Company, Chicago.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baer Brothers, New York City.
Barber Asphalt Corp., Barber, N. J.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co. Philadelphia, Pa.
Coddington Manufacturing Co., E. D., Milwaukee.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, Ohio.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Flintkote Co., New York City.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia.
Koppers Co., Pittsburgh, Pa.
Lastik Products Co., Inc., Pittsburgh, Pa.
Lehon Co., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Co., South Bend, Ind.
Ohmiac Paint & Refining Co., Chicago, Ill.
Paint-Point Corp., Newark, N. J.
Pecora Paint Co., Philadelphia, Pa.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Pyrolite Products Co., Cleveland, O.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Self-Vulcanizing Rubber Co., Inc., Chicago, Ill.
Sherwin-Williams Co., Cleveland.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Co., Chicago, Ill.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Toch Brothers, Inc., Elm Park, Staten Island, N. Y.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit, Mich.
U. S. Gutta Percha Paint Co., Providence, R. I.
United States Gypsum Co., Chicago, Ill.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Wilhelm Co., A., Reading Pa.

PAINT, COPPER

Acme White Lead & Color Works, Detroit.
Baer Brothers, New York City.
Debevoise Co., Brooklyn, N. Y.
Glidden Company, Cleveland.
Lucas & Company, Inc., John, Philadelphia.
Pittsburgh Plate Glass Co., Pittsburgh.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh, Pa.
Stokes, Jr., J. W., Brooklyn, N. Y.
U. S. Gutta Percha Paint Co., Providence, R. I.

PAINT, CRACKLE FINISH

Acme White Lead & Color Works, Detroit.
Baer Brothers, New York City.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hilo Varnish Corp., Brooklyn.
Inter-Coastal Paint Co., East St. Louis, Ill.
Iowa Paint Mfg Co., Des Moines, Ia.
Lucas & Company, Inc., John, Philadelphia.
Maas & Waldstein Co., Newark, N. J.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sanvin Chemical Products Co., Moline, Ill.
Sherwin-Williams Co., Cleveland.
Wattenamel Co., Summit, Ill.
Zapon-Brevolite Division, Atlas Powder Co., North Chicago, Ill.

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PAINT, HOT SURFACES

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Co., Cleveland, O.
•Allen Co., Inc., L. B., Chicago.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Baer Brothers, New York City.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co. Philadelphia, Pa.
Carey Co., Philip, Lockland, Ohio.
Carter Paint Co., Liberty, Ind.
Continental Products Co., Euclid, Ohio.
Dampney Co. of America, Hyde Park, Boston, Mass.
Devoe & Raynolds Co., Inc., New York City.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Gerard Chemical Co., Elizabeth, N. J.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hetzel Roofing Products Co., Newark, N. J.
Hilo Varnish Corp., Brooklyn, N. Y.
Horn Co., A. C., Long Island City, N. Y.
Iowa Paint Mfg. Co., Des Moines, Ia.
Krehbiel Co., J. H., Chicago.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Lastik Products Co., Inc., Pittsburgh, Pa.
Lucas & Company, Inc., John, Philadelphia.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland.
National Engineering Products, Inc., Washington, D. C.
National Mfg. Corp., Tonawanda, N. Y.
Nebel Manufacturing Co., Cleveland.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Co., South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago, Ill.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Pyrolite Products Co., Cleveland, O.
Roxalin Flexible Finishes, Inc., Elizabeth, N. J.
Sauereisen Cements Co., Sharpsburg, Pa.
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh.
Technical Coatings, Inc., New York City.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit, Mich.
U. S. Gutta Percha Paint Co., Providence, R. I.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Westinghouse Electric & Manufacturing Co., East Pittsburgh.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, FINISH COAT, BRUSH APPLIED

Acme White Lead & Color Works, Detroit.
American-Marietta Company, Chicago.
Barrett Division, Allied Chemical & Dye Corp., New York City.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Heath & Milligan Mfg. Co., Chicago.
Horn Company, A. C., Long Island City, N. Y.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
Midland Paint & Varnish Co., Cleveland. (Red)
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
North American Fibre Products Co., Cleveland.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sanvin Chemical Products Co., Moline, Ill.
Sherwin-Williams Co., Cleveland, Ohio.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Toch Brothers, Inc., Elm Park, S. I., N. Y.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron, O., and New York City.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, FINISH COAT, SPRAY APPLIED

Acme White Lead & Color Works, Detroit.
American-Marietta Company, Chicago.
Barrett Division, Allied Chemical & Dye Corp., New York City.
Carter Paint Company, Liberty, Indiana.
Cheesman-Elliot Co., Inc., Brooklyn, N. Y.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Fales Chemical Co., Inc., New York City.
Heath & Milligan Mfg. Co., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
Midland Paint & Varnish Co., Cleveland. (Graphite)
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sanvin Chemical Products Co., Moline, Ill.
Sauereisen Cements Co., Sharpsburg, Pa.
Sherwin-Williams Co., Cleveland, Ohio.
Sipe & Company, James B., Pittsburgh.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron, O., and New York City.
Wilson Company, Ludwig, Chicago.
Zapon Div., Atlas Powder Co., North Chicago, Ill.

PAINT, METAL PROTECTING, PRIME COAT, BRUSH APPLIED

Acme White Lead & Color Works, Detroit.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Carey Mfg. Co., Philip, Lockland, Ohio.
Carter Paint Company, Liberty, Ind.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Flood Company, Cleveland.
Heath & Milligan Mfg. Co., Chicago.
Horn Company, A. C., Long Island City, N. Y.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
National Engineering Products, Inc., Washington, D. C.
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
Nebel Manufacturing Co., Cleveland.
O'Brien Varnish Company, South Bend, Ind.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Quigley Company, Inc., New York City.
Sherwin-Williams Co., Cleveland, Ohio.
Sipe & Company, James B., Pittsburgh.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron Ohio, and New York City.
Wailes Dove-Hermiston Corporation, Westfield, N. J.
Wilson Company, Ludwig, Chicago.

PAINT, METAL PROTECTING, PRIME COAT, SPRAY APPLIED

Acme White Lead & Color Works, Detroit.
American Chemical Paint Co., Ambler, Pa.
American-Marietta Company, Chicago.
Carey Mfg. Co., Philip, Lockland, Ohio.
Carter Paint Company, Liberty, Indiana.
Cheesman-Elliot Co., Inc., Brooklyn.
Debevoise Company, Brooklyn, N. Y.
Detroit Graphite Company, Detroit.
Devoe & Raynolds Co., Inc., New York City.
duPont de Nemours & Company, E. I., Wilmington, Del.
Flood Company, Cleveland.
Heath & Milligan Mfg. Co., Chicago.
Hilo Varnish Corporation, Brooklyn.
Lucas & Company, Inc., John, Philadelphia.
Marley Chemical Company, Detroit.
National Engineering Products, Inc., Washington, D. C.
National Lead Company, New York City.
Nelson Mfg. Co., B. F., Minneapolis.
O'Brien Varnish Company, South Bend, Indiana.
Ohmlac Paint & Refining Co., Chicago.
Patterson-Sargent Co., Cleveland, Ohio.

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Pittsburgh Plate Glass Co., Pittsburgh.
Quigley Company, Inc., New York City.
Sherwin-Williams Co., Cleveland, Ohio.
Sipe & Company, James B., Pittsburgh.
Socony Paint Products Company, New York City.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Company, Chicago.
Tropical Paint & Oil Co., Cleveland.
U. S. Gutta Percha Paint Co., Providence, R. I.
U. S. Stoneware Company, Akron Ohio, and New York City.
Wailes Dove-Hermiston Corporation, Westfield, N. J.
Wilson Company, Ludwig, Chicago.
Zapon Div., Atlas Powder Co., North Chicago, Ill.

PAINT, ROOFING

Acme Refining Co., Cleveland, O.
Acme White Lead & Color Works, Detroit.
Acorn Refining Co., Cleveland.
American-Marietta Company, Chicago.
Asphalt Products Co., Inc., Syracuse, N. Y.
Baer Brothers, New York City.
Barber Asphalt Corp., Barber, N. J.
Barrett Division, Allied Chemical & Die Corporation, New York City. (Pitch)
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carey Co., Philip, Lockland, Ohio.
Carter Paint Co., Liberty, Ind.
Cheesman-Elliot Co., Inc., Brooklyn.
Clinton Metallic Paint Co., Clinton, N. Y. (Red Metallic and Venetian)
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Continental Products Co., Euclid, Ohio. (All kinds)
Debevoise Co., Brooklyn, N. Y.
Devoe & Raynolds Co., Inc., New York City.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Flintkote Co., New York City.
Ford Roofing Products Company, Chicago.
Glidden Co., Cleveland, O.
Hague & Co., Inc., Alfred, Brooklyn, N. Y.
Heath & Milligan Mfg. Co., Div. of Glidden Co., Chicago, Ill.
Hetzel Roofing Products Co., Newark, N. J.
Horn Co., A. C., Long Island City, N. Y.
Inter-Coastal Paint Co., East St. Louis, Ill.
Iowa Paint Mfg. Co., Des Moines, Ia. (Asphalt)
Koppers Co., Pittsburgh, Pa. (Bituminous)
Krehbiel Co., J. H., Chicago.
Lastik Products Co., Inc., Pittsburgh, Pa. (Asphalt, Tar)
Lehon Co., Chicago.
Lucas & Company, Inc., John, Philadelphia.
Lyon, Conklin & Co., Inc., Baltimore.
Metropolitan Refining Co., Long Island City, N. Y.
Midland Paint & Varnish Co., Cleveland. (Fibercote)
National Mfg. Corp., Tonawanda, N. Y.
Nelson Mfg. Co., B. F., Minneapolis.
Nebel Manufacturing Co., Cleveland.
North American Fibre Products Co., Cleveland.
Ohmiac Paint & Refining Co., Chicago, Ill. (Asphalt)
Pecora Paint Co., Philadelphia, Pa.
Pittsburgh Plate Glass Co., Pittsburgh.
Protective Coatings, Incorporated, Detroit.
Pyrolite Products Co., Cleveland, O.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Robertson Co., H. H., Pittsburgh. (Processed Asphalt)
Ruberoid Co., New York City.
Rutland Fire Clay Co., Rutland, Vt. (Asphalt)
Sherwin-Williams Co., Cleveland.
Sipe & Company, James B., Pittsburgh.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Tamms Silica Co., Chicago, Ill.
Thompson & Co., Oakmont (Pittsburgh Dist.), Pa.
Toch Brothers, Inc., Elm Park, S. I., N. Y.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit.
U. S. Gutta Percha Paint Co., Providence, R. I.
United States Gypsum Co., Chicago.
Wilson Company, Ludwig, Chicago.

PAINT SPRAY GUNS

See Guns, Spray, Paint

PAPER, ASBESTOS

Acme Asbestos Covering & Flooring Co., Chicago.
Carey Co., Philip, Lockland, Ohio.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Johns-Manville New York City.
Keasbey & Mattison Co., Ambler, Pa.
Linear Packing & Rubber Co., Inc., Philadelphia.
Norristown Magnesia & Asbestos Co., Norristown, Pa.
Ruberoid Co., New York City.
●Sall Mountain Co., Chicago, Ill.
Smith & Kanzler Corp., Elizabeth, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
●Wilson, Inc., Grant, Chicago, Ill.

PARTS, for HEATING and AIR CONDITIONING EQUIPMENT

(Tank Heads and Bottoms, Water Heater Legs)

Ackermann Manufacturing Company, Wheeling, W. Va. (Furnace Heads)
Anemostat Corporation of America, New York City.
Commercial Shearing & Stamping Co., Youngstown, Ohio.
Detroit Stamping Co., Detroit.

PASTE, ASBESTOS PAPER

Acme Asbestos Covering & Flooring Co., Chicago.
Clark Stek-O Corp., Rochester, N. Y.
Lyon, Conklin & Co., Inc., Baltimore.
Norristown Magnesia & Asbestos Co., Norristown, Pa.
Ruberoid Co., New York City.
Rutland Fire Clay Co., Rutland, Vt.
●Sall Mountain Co., Chicago, Ill.
Smith & Kanzler Corp., Elizabeth, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Western Mineral Products Co., Omaha, Nebr.
●Wilson, Inc., Grant, Chicago, Ill.

PATTERNS, BLUE PRINT, ELBOWS, SKYLIGHTS and FITTINGS

●Gray, G. L., New Haven, Conn.

PERFORATED METAL

See Metals, Perforated, Sheet and Plate

PILLOW BLOCKS

See Bearings, Pillow Block

PIPE, CONDUCTOR

Ames Co., W. R., San Francisco, Cal.
Barnes Metal Products Co., Chicago, Ill.
Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.
●Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Div. of Republic Steel Corp., Canton, O.
Braden Mfg. Co., Terre Haute, Ind.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Downs-Smith Brass & Copper Co., New York City.
Edwards Manufacturing Co., Inc., Cincinnati.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Herbert & Sons, T. L., Nashville, Tenn.
●Hussey & Co., C. G., Pittsburgh, Pa. (Copper)
Klauer Manufacturing Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamb & Ritchie Co., Cambridge, Mass.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
●Miller & Doing, Inc., Brooklyn, N. Y.
New Delphos Manufacturing Co., Delphos, Ohio.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
●Osborn Co., J. M. & L. A., Cleveland, O.
Reeves Steel & Mfg. Co., Dover, O.
Revere Copper and Brass Incorporated, New York City.
Riggin Metal Products, Inc., Kankakee, Ill.
Schecter Brothers Company, Philadelphia.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Sheet Metal Products Co., Peoria, Ill.
Southern States Iron Roofing Co., Savannah, Ga.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco.
Woolwine Metal Products Co., Los Angeles, Cal.
York Corrugating Co., York, Pa.

PIPE, FURNACE

Acer & Whedon, Inc., Medina, N. Y.
Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
Biersach & Niedermeyer Co., Milwaukee.
Braden Mfg. Co., Terre Haute, Ind.
Champion Furnace Pipe Co., Peoria, Ill.
Char-Gale Mfg. Co., Minneapolis.
Chicago Furnace Supply Co., Chicago.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Cincinnati Stamping Co., Cincinnati, O.
Corbman Bros., Inc., Philadelphia, Pa.
Detroit Safety Furnace Pipe Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Gray Metal Products, Inc., Rochester, N. Y.
Green Colonial Furnace Co., Des Moines, Ia.
●Henry Furnace & Foundry Co., Cleveland, O.
Herbert & Sons, T. L., Nashville, Tenn.
Home Furnace Co., Holland, Mich.

Howes-Woods Company, Cambridge, Mass.
International Heater Co., Utica, N. Y.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y.
Keith Furnace Co., Des Moines, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamneck Products, Inc., Middletown, Ohio.
Lennox Furnace Co., Marshalltown, Ia.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Majestic Co., Huntington, Ind.
Maple City Furnace Co., Monmouth, Ill.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Osborn Co., J. M. & L. A., Cleveland, O.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
●Peerless Foundry Co., Indianapolis, Ind.
Portland Stove Foundry Co., Portland, Me.
Reeves Steel & Mfg. Co., Dover, O.
Riggin Metal Products, Inc., Kankakee, Ill.
Roberts-Hamilton Co., Minneapolis, Minn.
Schecter Brothers Co., Philadelphia, Pa.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Incorporated, Brooklyn.
Sheet Metal Specialty Co., Pittsburgh.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Standard Furnace & Supply Co., Omaha, Nebr.
Stratton & Terstegge Co., Louisville, Ky.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
●United States Register Co., Battle Creek, Mich.
Waterman-Waterbury Co., Minneapolis.
Wheeling Corrugating Co., Wheeling, W. Va.
Williamson Heater Co., Cincinnati, O.
Williams-Wallace Co., San Francisco.

PIPE, SMOKE

Acer & Whedon, Inc., Medina, N. Y.
Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
●Airtherm Mfg. Co., St. Louis, Mo.
Bieler & Son, Inc., L., Long Island City, N. Y.
Biersach & Niedermeyer Co., Milwaukee.
Bovee Furnace Works, Waterloo, Iowa. (Cast Iron)
Braden Mfg. Co., Terre Haute, Ind.
Campbell Heating Co., Des Moines, Ia.
Champion Furnace Pipe Co., Peoria, Ill.
Char-Gale Mfg. Co., Minneapolis.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Cincinnati Stamping Co., Cincinnati, O.
Corbman Bros., Inc., Philadelphia.
Detroit Safety Furnace Pipe Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Galva Heater Co., Galva, Ill. (Cast Iron)
Green Colonial Furnace Co., Des Moines, Ia.
●Henry Furnace & Foundry Co., Cleveland, O.
Herbert & Sons, T. L., Nashville, Tenn.
Home Furnace Co., Holland, Mich.
Howes-Woods Company, Cambridge, Mass.
International Heater Co., Utica, N. Y.
Juniper Elbow Company, Inc., Middle Village, L. I., N. Y.
Keith Furnace Co., Des Moines, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lamneck Products, Inc., Middletown, O.
Lennox Furnace Co., Marshalltown, Ia.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Majestic Co., Huntington, Ind.
Maple City Furnace Co., Monmouth, Ill.
Marshall Furnace Co., Marshall, Mich.
Martin Metal Mfg. Co., Wichita, Kan.
●Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Wis.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Osborn Co., J. M. & L. A., Cleveland, O.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
Patten Co., J. V., Sycamore, Ill.
●Peerless Foundry Co., Indianapolis, Ind.
Portland Stove Foundry Co., Portland, Me.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Reeves Steel & Mfg. Co., Dover, O.
Riggin Metal Products, Inc., Kankakee, Ill.
Roberts-Hamilton Co., Minneapolis, Minn.
Schecter Brothers Co., Philadelphia, Pa.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Skinner Htg. & Vent. Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., St. Louis.
Standard Furnace & Supply Co., Omaha, Nebr.
Ster-Na-Man Foundry Co., Springfield, Ill. (Cast Iron)
Stratton & Terstegge Co., Louisville, Ky.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Tri-State Heating Supply Co., Fort Wayne, Ind.
●United States Register Co., Battle Creek, Mich.
Waterloo Register Co., Waterloo, Ia. (Cast Iron)
Waterman-Waterbury Co., Minneapolis.
Wheeling Corrugating Co., Wheeling, W. Va.
Wilder Manufacturing Company, Niles, O.
Williamson Heater Co., Cincinnati, O.
Williams-Wallace Co., San Francisco.
●Wise Furnace Co., Akron, O.

PIPE LOCK FORMERS

See Machines, Pipe, Lock Forming

PIPE & FITTINGS, GAS VENT AND FLUE

Char-Gale Mfg. Co., Minneapolis. (blue and galvanized)
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
●Condensation Engineering Corp., Chicago. (Vitreous Enamel)
Heremetal Company, Minneapolis. (Heresite coated)
Johns-Manville, New York City.
Laclede Steel Co., St. Louis. (Butt Weld—Wrought Steel)
●Osborn Co., J. M. & L. A., Cleveland.
●Payne Furnace & Supply Co., Beverly Hills, Cal. (Insulated Aluminum)
Skuttle Manufacturing Co., Detroit.
Wilder Manufacturing Co., Niles, O. (Chromed, Nickeled, Aluminum, Wildergloss, Wilder Metal, Galvanized, Blue)
Williams-Wallace Co., San Francisco.

PIPE AND FITTINGS, SHEET METAL

See Ducts and Fittings, Prefabricated

PITTSBURGH LOCK FORMING MACHINES

See Machines, Pittsburgh Lock Forming

PLATE, BEARING, STUDDING SPACE

Adjustable Bearing Plate Co., St. Louis, Mo.

PLATES, ALLOY

Allegheny Ludlum Steel Corp., Pittsburgh. (Stainless)
Aluminum Company of America, Pittsburgh, Pa.
●American Brass Co., Waterbury, Conn. (Copper)
●American Rolling Mill Co., Middletown, O.
●Bethlehem Steel Co., Bethlehem, Pa.
Bridgeport Brass Co., Bridgeport, Conn.
Carnegie-Illinois Steel Corp., Pittsburgh.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn. (Copper and its alloys)
Colonial Alloys Co., Philadelphia. (Stainless)
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago, Ill. (Stainless clad)
Lukens Steel Co., Coatesville, Pa.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass Incorporated, New York City.
Universal-Cyclops Steel Corporation, Bridgeville, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES, STEEL

●American Rolling Mill Co., Middletown, O.
●Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Columbia Steel Co., San Francisco, Cal.
Granite City Steel Co., Granite City, Ill.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago, Ill. (Stainless clad)
Inland Steel Co., Chicago, Ill.
International Steel Co., Evansville, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Lukens Steel Co., Coatesville, Pa.
Otis Steel Co., Cleveland, O.
Republic Steel Corp., Cleveland.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Wood Steel Co., Alan, Conshohocken, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES, WROUGHT IRON

Byers Co., A. M., Pittsburgh, Pa.

POLISHERS

See Buffers, Grinders, Polishers, Sanders and Finishers, Metal

PREFABRICATED DUCTS

See Ducts and Fittings, Prefabricated

PRESSES AND DIES

Bath & Company, Cyril, Cleveland.
Bertsch & Co., Cambridge City, Ind.
Bliss Co., E. W., Toledo, O.
Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Cincinnati Shaper Co., Cincinnati, O.
Clearing Machine Corp., Chicago.
Cleveland Punch & Shear Works Co., Cleveland, O.
●Dreis & Krump Mfg. Co., Chicago, Ill.
Grand Rapids Die & Tool Co., Grand Rapids, Mich.
Henry & Wright Mfg. Co., Hartford, Conn.
Leslie Welding Co., Chicago. (Hand Punch Press)
●Marshalltown Mfg. Co., Marshalltown, Ia.

● Advertisement in this issue. See Index to Advertisers, page 252

Minster Machine Co., Minster, O.
New Albany Machine Mfg. Co., New Albany, Ind.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Service Machine Co., Elizabeth, N. J.
Spun Steel Corp., Canton, O.
Streine Tool & Mfg. Co., New Bremen, Ohio.
Swain Mfg. Co., Fred J., St. Louis.
●Verson Allsteel Press Co., Chicago.
Ward Machinery Co., Chicago.
Zeh & Hahnemann Co., Newark, N. J.

PROTECTORS, DOWNSPOUT

See Fittings and Accessories, Conductor

PSYCHROMETERS, SLING AND HAND-ASPIRATED

American Moistening Co., Providence, R. I.
Friez & Sons, Julien P., Towson, Md.
G. M. Manufacturing Co., New York City.
H-B Instrument Co., Inc., Philadelphia, Pa.
Hill, E. Vernon, Chicago, Ill.
Johnson Service Co., Milwaukee.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Co., Norwood, Cincinnati, O.
Parks-Cramer Co, Fitchburg, Mass.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit.
Tagliabue Mfg. Co., C. J. Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.
Weksler Thermometer Corp., New York City.

PULLEYS, FAN AND MOTOR

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Pulley Co., Philadelphia, Pa.
Browning Mfg. Co., Inc., Maysville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago.
Chicago Die Casting Co., Chicago, Ill.
Congress Die Casting Div., Congress Tool & Die Co., Detroit, Mich.
Dayton Rubber Mfg. Co., Dayton, Ohio.
Dick Co., Inc., R. & J., Passaic, N. J.
Dodge Mfg. Corp., Mishawaka, Ind.
Duro Metal Products Co., Chicago, Ill.
Gates Rubber Co., Denver, Colo.
Goldens' Fdry. & Mach. Co., Columbus, Ga.
Horton Mfg. Co., Minneapolis, Minn.
Jones Fdry. & Mach. Co., W. A., Chicago, Ill.
Lau Blower Co., Dayton, O.
Linderme Machine & Tool Co., Inc., Detroit.
●Maurey Mfg. Corp., Chicago, Ill.
Medart Co., St. Louis, Mo.
●Morrison Products, Inc., Cleveland.
Pyott Fdry. & Mach. Co., Chicago, Ill.
Reynolds Mfg. Co., Grand Rapids, Mich.
Rockwood Mfg. Co., Indianapolis, Ind.
St. Louis Tool Co., St. Louis.
Smith, Inc., Winfield H., Springfield, N. Y.
Spun Steel Corp., Canton, O.
Swift Mfg. Co., Detroit, Mich.
Utility Fan Corporation, Los Angeles, Cal.
Wood's Sons Co., T. B., Chambersburg, Pa.

PULLEYS, FURNACE CHAIN

●Hart & Cooley Mfg. Co., Holland, Mich.
Medart Co., St. Louis.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
Stover Mfg. & Engine Co., Freeport, Ill.
Thermoid Rubber Division of Thermoid Co., Trenton, N. J.
●United States Register Co., Battle Creek, Mich.

PULLEYS, VARIABLE SPEED

Allis-Chalmers Manufacturing Co., Milwaukee.
American Pulley Co., Philadelphia.
Browning Mfg. Co., Inc., Maysville, Ky.
Chicago Die Casting Company, Chicago.
Congress Die Casting Div., Congress Tool & Die Co., Detroit.
Continental Machines, Inc., Des Plaines, Ill.
Equipment Engineering Co., Minneapolis.
Gates Rubber Co. Sales Div., Inc., Denver, Colo.
Ideal Commutator Dresser Co., Sycamore, Ill.
Lewellen Mfg. Co., Columbus, Ind.
Link-Belt Co., Chicago.
Reeves Pulley Co., Columbus, Ind.
Speedmaster Company, Des Plaines, Ill.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
●White Manufacturing Co., St. Paul.

PUMPS, DEEP-WELL

American-Marsh Pumps, Inc., Battle Creek, Mich.
Chandler Co., Cedar Rapids, Ia.
Cook, Inc., A. D., Lawrenceburg, Ind.
Crane Co., Chicago, Ill.
Dayton Pump & Mfg. Co., Dayton, O.
Decatur Pump Co., Decatur, Ill.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Deming Co., Salem, O.
Everite Pump & Mfg. Co., Inc., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Heil Co., Milwaukee, Wis.
Layne & Bowler, Inc., Memphis, Tenn.
Meier Electric & Machine Co., Indianapolis, Ind.
Monarch Engineering Company, Dayton, Ohio.
Myers & Bro. Co., F. E., Ashland, O.
Pacific Pump Works, Huntington Park, Cal.
Peerless Pump Division, Food Machinery Corporation, Los Angeles.
Peerless Pump Div., Food Machinery Corp., Canton, Ohio.
Pomona Pump Co., Pomona, Cal.
Red Jacket Mfg. Co., Davenport, Ia.
Uniflow Mfg. Co., Erie, Pa.

PUMPS FUEL OIL (for Oil Burners)

●Automatic Products Company, Milwaukee. (Oil Burner)
DeLaval Steam Turbine Co., Trenton, N. J. (For oil burners)
Kraissl Co., Inc., Hackensack, N. J.
Monarch Manufacturing Works, Inc., Philadelphia.
Quimby Pump Co., Inc., Newark, N. J.
Tuthill Pump Co., Chicago.
Viking Pump Company, Cedar Falls, Iowa.
Webster Electric Co., Racine, Wis.

PUMPS, SHALLOW-WELL

American-Marsh Pumps, Inc., Battle Creek, Mich.
Chandler Co., Cedar Rapids, Ia.
Chicago Pump Co., Chicago.
Cook, Inc., A. D., Lawrenceburg, Ind.
Crane Co., Chicago, Ill.
Dayton Pump & Mfg. Co., Dayton, O.
Decatur Pump Co., Decatur, Ill.
DeLaval Steam Turbine Co., Trenton, N. J.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Deming Co., Salem, O.
Everite Pump & Mfg. Co., Inc., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Co., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Grainger, Inc., W. W., Chicago.
Heil Co., Milwaukee, Wis.
Layne & Bowler, Inc., Memphis, Tenn.
Lewis & Co., Inc., Chas. S., St. Louis.
Meier Electric & Machine Co., Indianapolis, Ind.
Monarch Engineering Company, Dayton, Ohio.
Morris Machine Works, Baldwinsville, N. Y.
Myers & Bro. Co., F. E., Ashland, Ohio.
Pacific Pump Works, Huntington Park, Cal.
Peerless Pump Division Food Machinery Corporation, Los Angeles.
Peerless Pump Div., Food Machinery Corp., Canton, Ohio.
Pomona Pump Co., Pomona, Cal.
Red Jacket Mfg. Co., Davenport, Ia.
Roper Corp., Geo. D., Rockford, Ill.
Uniflow Mfg. Co., Erie, Pa.
Union Steam Pump Co., Battle Creek, Mich.
Viking Pump Co., Cedar Falls, Ia.
Weinman Pump Mfg. Co., Columbus, Ohio.

PUMPS, WATER CIRCULATING

Aldrich Pump Co., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Bell & Gossett Company, Morton Grove, Ill.
Buffalo Pumps, Inc., Buffalo, N. Y.
Chicago Pump Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
De Laval Steam Turbine Co., Trenton, N. J.
Economy Pumps, Inc., Hamilton, Ohio.
Essick Mfg. Co., Los Angeles. (for Evaporative Coolers)
Everite Pump & Mfg. Co., Inc., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Co., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Grainger, Inc., W. W., Chicago.
Ingersoll-Rand, New York City.
Lecourtenay Co., Newark, N. J.
Lewis & Co., Inc., Chas. S., St. Louis, Mo.
Monarch Engineering Company, Dayton, Ohio.
Morris Machine Works, Baldwinsville, N. Y.
Myers & Bro. Co., F. E., Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
National Steam Pump Co., Upper Sandusky, O.
Pacific Pump Works Huntington Park, Cal.
Palmer Electric Co., Detroit, Mich.
Peerless Pump Division, Food Machinery Corporation, Los Angeles.

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Pernot & Rich, Inc., Los Angeles.
Pomona Pump Co., Pomona, Cal.
Quimby Pump Co., Inc., Newark, N. J.
Red Jacket Mfg. Co., Davenport, Ia.
Roper Corp., Geo. D., Rockford, Ill.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Spiegel Corporation, G. B., Chicago.
Swaby Mfg. Co., Chicago, Ill.
Trane Co., LaCrosse, Wis.
Trimount Rotary Power Co., East Dedham, Mass.
Uniflow Mfg. Co., Erie, Pa.
Union Steam Pump Co., Battle Creek, Mich.
Utility Fan Corporation, Los Angeles.
Viking Pump Co., Cedar Falls, Ia.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., Columbus, O.
Yeomans Bros. Co., Chicago, Ill.

PUNCHES AND SHEARS COMBINED, LEVER OPERATED

Armstrong-Blum Mfg. Co., Chicago, Ill.
Beatty Machine & Mfg. Co., Hammond, Ind.
Bertsch & Co., Cambridge City, Ind.
Bollaert, M., Oakland, Cal.
Buffalo Forge Co., Buffalo, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Excelsior Tool & Machine Co., East St. Louis, Ill.
G.D.S. Machinery & Supply Co., New York City.
Heartley Machine & Tool Co., Toledo, O.
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
National Machine Tool Co., Racine, Wis.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rock River Machine Div., Hannifin Mfg. Co., Chicago.
Royersford Foundry & Machine Co., Royersford, Pa.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Weiss & Co., H., New York City.

PUNCHES, BENCH

Armstrong-Blum Mfg. Co., Chicago, Ill.
Bollaert, M., Oakland, Cal.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Clough, A. W., Meriden, Conn.
Excelsior Tool and Machine Co., East St. Louis, Ill.
Heartley Machine & Tool Co., Toledo, O.
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
Maplewood Machinery Co., Chicago.
New Albany Machine Mfg. Co., New Albany, Ind.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rock River Machine Div., Hannifin Mfg. Co., Chicago.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Weiss & Co., H., New York City.
●Whitney Mfg. Co., W. A., Rockford, Ill.
●Whitney Metal Tool Co., Rockford, Ill.
Wiedemann Machine Co., Philadelphia . (Turret)

PUNCHES, COMBINATION HAND AND BENCH

Armstrong-Blum Mfg. Co., Chicago, Ill.
Bollaert, M., Oakland, Cal.
Champion Blower & Forge Co., Lancaster, Pa.
Heartley Machine & Tool Co., Toledo, O.
Hendley & Whittemore Co., Beloit, Wis.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Parker-Kalon Corp., New York City.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rock River Machine Div., Hannifin Mfg. Co., Chicago.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Weiss & Co., H., New York City.
●Whitney Mfg. Co., W. A., Rockford, Ill.
●Whitney Metal Tool Co., Rockford, Ill.

PUNCHES, HAND

Armstrong-Blum Mfg. Co., Chicago, Ill.
Bertsch & Co., Cambridge City, Ind.
Bollaert M., Oakland, Cal.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Punch & Shear Works Co., Cleveland, O.
Clough, A. W., Meriden, Conn.
●Crescent Tool Co., Jamestown, N. Y.
Hendley & Whittemore Co., Beloit, Wis.
Ingels Elbow Machine Corporation, Chicago.
Johnson, Inc., William, Newark, N. J.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
Maplewood Machinery Co., Inc., Chicago.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Parker-Kalon Corp., New York City.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rock River Machine Div., Hannifin Mfg. Co., Chicago.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Service Machine Co., Elizabeth, N. J.
Stanley Tools, New Britain, Conn.
Weiss & Co., H., New York City.
●Whitney Mfg. Co., W. A., Rockford, Ill.
●Whitney Metal Tool Co., Rockford, Ill.
Wiedemann Machine Co., Philadelphia. (Turret)

PUNCHES, POWER

Beatty Machine & Mfg. Co., Hammond, Ind.
Bertsch & Co., Cambridge City, Ind.
Bliss Co., E. W., Toledo, O.
Buffalo Forge Co., Buffalo, N. Y.
Callahan Can Machine Co., Inc., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Engineering and Research Corporation, Riverdale, Md.
Excelsior Tool and Machine Co., East St. Louis, Ill.
Hendley & Whittemore Co., Beloit, Wis.
Henry & Wright Mfg. Co., Hartford, Conn.
New Albany Machine Mfg. Co., New Albany, Ind.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
Rock River Machine Div., Hannifin Mfg. Co., Chicago.
Royersford Foundry & Machine Co., Royersford, Pa.
Schatz Mfg. Co., Poughkeepsie, N. Y.
Service Machine Co., Elizabeth, N. J.
Streine Tool & Mfg. Co., New Bremen, Ohio.
Swaine Mfg. Co., Fred J., St. Louis, Mo.
●Verson Allsteel Press Co., Chicago.
Weiss & Co., H., New York City.
●Whitney Metal Tool Co., Rockford, Ill.
Wiedemann Machine Co., Philadelphia. (Turret)
Zeh & Hahnemann Co., Newark, N. J.

QUADRANTS, DAMPER

See Regulators, Damper Sets

RECORDERS, HUMIDITY, PORTABLE

Bristol Co., Waterbury, Conn.
Brown Instrument Co., Div. of Minneapolis-Honeywell Reg. Co., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Friez & Sons, Julien P., Towson, Md.
Marsh Corporation, Jas. P., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Scientific Instrument Co., Detroit.
Tagliabue Mfg. Co., C. J., Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.

RECORDERS, TEMPERATURE, PORTABLE

Bailey Meter Company, Cleveland.
Bristol Co., Waterbury, Conn.
Brown Instrument Co., Div. of Minneapolis-Honeywell Reg. Co., Philadelphia, Pa.
Defender Automatic Regulator Co., St. Louis.
Foxboro Co., Foxboro, Mass.
Friez & Sons, Julien P., Towson, Md.
Marsh Corporation, Jas. P., Chicago.
Mason-Neilan Regulator Co., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Moeller Instrument Co., Richmond Hill, New York City.
Practical Instrument Co., Chicago, Ill.
Scientific Instrument Co., Detroit.
Tagliabue Mfg. Co., C. J., Brooklyn.
Taylor Instrument Companies, Rochester, N. Y.

REFRACTORIES

Babcock & Wilcox Co., New York City.
Botfield Refractories Company, Philadelphia.
Chicago Fire Brick Co., Chicago, Ill.
●Fireline Stove & Furnace Lining Co., Chicago. (For Hearths and Firepot Linings)
General Insulating Products Co., Brooklyn.
Gilbert & Son, Harry E., Bridgeport, Conn. (Radiant)
Green Fire Brick Co., A. P., Mexico, Mo.
Johns-Manville, New York City. (Cement and monolithic)
Krehbiel Co., J. H., Chicago, Ill.
Laclede-Christy Clay Products Co., St. Louis, Mo. (Moldable Plastic)
McLeod & Henry Co., Inc., Troy, N. Y. (Silican Carbide)
Munn and Steele, Inc., Newark, N. J.
Plibrico Jointless Firebrick Co., Chicago.
Preferred Utilities Mfg. Corp., New York City.
Pyrolite Products Co., Cleveland, O.
Quigley Company, Inc., New York City. (Firebrick and Cements)
Ramtite Co., Chicago. (Castable)
Refractory & Insulation Corp., New York City.
Rex Clay Products Co., Detroit, Mich.
Robinson Insulation Co., Great Falls, Mont.
Ruberoid Co., New York City.
Rutland Fire Clay Co., Rutland, Vt.
Standard Fuel Engineering Co., Detroit, Mich.
U. S. Stoneware Company, Akron, Ohio, and New York City.
Universal Zonolite Insulation Co., Chicago. (Brick and (Cement)
Walsh Refractories Corp., St. Louis, Mo.

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REGALVANIZING EQUIPMENT AND MATERIALS

Galv-Weld, Incorporated, Dayton, Ohio.

REGISTER SHIELDS

See Shields, Warm Air Register

REFRIGERATING UNITS

See Compressors, Refrigerating

REGISTERS, DIRECTIONAL FLOW

A-J Manufacturing Co., Kansas City, Mo.
●Air Control Products, Inc., Coopersville, Mich.
Airo-Fin Grille Co., Detroit.
●Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Char-Gale Mfg. Co., Minneapolis.
Davies Air Filter Corp., New York City.
Diamond Manufacturing Co., Wyoming, Pa.
Elsey Metal Specialties Co., Detroit, Mich.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Gillian Mfg. Co., Detroit.
●Hart & Cooley Mfg. Co., Holland, Mich.
Hendrick Mfg. Co., Carbondale, Pa.
●Independent Register Co., Cleveland, O.
Middleton Mfg. & Sales Co., Minneapolis.
●Register & Grille Mfg. Co., Brooklyn, N. Y.
●Rock Island Register Co., Rock Island, Ill.
●Standard Stamping & Perforating Co., Chicago.
Stewart Manufacturing Co., Orange, N. J.
●Tuttle & Bailey, Inc., New Britain, Conn.
●United States Register Co., Battle Creek, Mich.
Waterloo Register Co., Waterloo, Ia.

REGISTERS, HEATING AND VENTILATING

A-J Manufacturing Co., Kansas City, Mo. (Double Diffuser)
●Air Control Products, Inc., Coopersville, Mich.
Airo-Fin Grille Co., Detroit.
●Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Best Register Co., Milwaukee, Wis.
Davies Air Filter Corp., New York City.
Diamond Mfg. Co., Wyoming, Pa.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Gillian Mfg. Co., Detroit.
●Hart & Cooley Mfg. Co., Holland, Mich.
Hendrick Mfg. Co., Carbondale, Pa.
●Independent Register Co., Cleveland, O.
Lamneck Products, Inc., Middletown, O.
Middleton Mfg. & Sales Co., Minneapolis.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Roberts-Hamilton Co., Minneapolis, Minn.
●Rock Island Register Co., Rock Island, Ill.
●Standard Stamping & Perforating Co., Chicago.
Stewart Manufacturing Co., Orange, N. J.
United States Register Co., Battle Creek, Mich.
●United States Register Co., Battle Creek, Mich.
Waterloo Register Co., Waterloo, Ia.
●Wood Industries, Inc., Gar, Detroit.

REGULATORS, DAMPER SETS

●Adams Company, The, Dubuque, Ia.
●Air Control Products, Inc., Coopersville, Mich.
Barber-Colman Company, Rockford, Ill.
Cole-Sullivan Engineering Co., Minneapolis.
Fossum Mfg. Co., M. H., St. Paul, Minn.
●Gerett Co., M. A., Milwaukee.
Goese Mfg. Co., Milwaukee, Wis.
●Hart & Cooley Mfg. Co., Holland, Mich.
Joal Mfg. Corp., Toledo.
Kerentoff, G. L., Cincinnati.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
Northern Weatherstrip Co., Duluth, Minn.
Ohio Products Co., Cleveland.
●Parker-Kalon Corp., New York City.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corporation, Milwaukee.
Sampsel Time Control, Inc., Spring Valley, Ill.
●United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland.

REGULATORS, DRAFT, SMOKE PIPE

Atlas Valve Company, Newark, N. J.
Campbell Engineering Co., Appleton, Wis. (Electric)
Cole-Sullivan Engineering Co., Minneapolis, Minn.
Defender Automatic Regulator Co., St. Louis.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Field Control Division, Mendota, Ill.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Gold Seal Furnace Co., Minneapolis, Minn. (Automatic)
Harvey-Whipple, Inc., Springfield, Mass.
Hotstream Heater Co., Cleveland, O. (Automatic)
James Regulator Co., Inc., Pottsville, Pa.
Platt Products Corporation, Lansing, Mich.
Polk Mfg Co., Madison, Wis. (Combination)
Preferred Utilities Mfg. Corp., New York City.
Simplex Mfg. Co., Fond du Lac, Wis.
●Walker Mfg. & Sales Corp., St. Joseph, Mo.
Wisconsin Heating & Draft Control Co., Appleton, Wis. (Electric)

REGULATORS, FURNACE DRAFT, MECHANICAL

Au-Temp-Co Corp., New York City.
Defender Automatic Regulator Co., St. Louis.
Fulton Sylphon Co., Knoxville, Tenn.
Gleason-Avery, Inc., Auburn, N. Y.
●Hart & Cooley Mfg. Co., Holland, Mich.
Hays Corp., Michigan City, Ind.
Little Janitor Furnace Clock Co., New York City.
●Mercoid Corp., Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Tem Products Co., Midland, Pa.
Timm & Son, P. C., Lincoln, Nebr.
Uni-Therm Products Co., Elyria, O.
Wisconsin Heating & Draft Control Co., Appleton, Wis. (Electric)

RELAYS, ELECTRICAL

Advance Electric Co., Los Angeles, Cal.
Allen-Bradley Co., Milwaukee, Wis.
American Instrument Co., Silver Spring, Md.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Au-Temp-Co Corp., New York City.
Automatic Switch Co., New York City.
Automatic Temperature Control Co., Inc., Philadelphia.
Barber-Colman Co., Rockford, Ill.
Bender Warrick Corp., Birmingham, Mich.
Benjamin Elec. Mfg. Co., Des Plaines, Ill.
Boston Auto Gage Co., Pittsfield, Mass.
Clark Controller Co., Cleveland, O.
Consolidated Car-Heating Co., Inc., Albany, N. Y.
Cook Electric Co., Chicago, Ill.
Cramer Company, Inc., R. W., Centerbrook, Conn.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis & Co., Inc., Dean W., Chicago.
Detroit Lubricator Co., Detroit, Mich.
Dunn, Inc., Struthers, Philadelphia, Pa.
Durakool, Inc, Elkhart, Ind. (Mercury)
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Gleason-Avery, Inc., Auburn, N. Y.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Inc., Philadelphia, Pa.
Hart Mfg. Co., Hartford, Conn.
Industrial Engineering Corp., Terre Haute, Ind.
Jefferson Electric Co., Bellwood, Ill.
McCorkle Co., D. H., Berkeley, Cal.
Magnet Switch Co., Chicago.
●Mercoid Corp., Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller Co., Baltimore, Md.
National Time & Signal Corp. Detroit.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Philadelphia Thermometer Co., Philadelphia.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Small Motors, Inc., Chicago.
Spencer Thermostat Co., Attleboro, Mass.
Square D Co., Detroit.
Taylor Instrument Companies, Rochester, N. Y.
Triplex Mfg. Co., Peru, Ind.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Weston Electrical Instrument Corp., Newark, N. J.
●White-Rodgers Electric Co., St. Louis.
Zenith Electric Co., Chicago, Ill.

REPAIRS, STOVE AND FURNACE

●Adams Company, The, Dubuque, Ia.
Associated Heater Parts Co., Chicago, Ill.
Banner Repair Parts Co., Youngstown, O.
●Brauer Supply Co., A. G., St. Louis, Mo.
Central Furnace & Stove Repair Co., St. Louis, Mo.
Cincinnati Stamping Co., Cincinnati, O.
Clark Co., Henry N., Boston.
Cleveland Co-Operative Stove Co., Cleveland.
●Des Moines Stove Repair Co., Des Moines, Ia.
Eselgroth & Co., Newark, N. J.
Faultless Heater Corp., Cleveland, O.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Kramer Bros. Foundry Co., Dayton, Ohio.
Livingston Repair, Marshall, Mich.

● Advertisement in this issue. See Index to Advertisers, page 252

Manufacturers Successors, Inc., New York City.
Metzner Stove Repair Co., Kansas City, Mo.
Miller & Son, C. Arthur, Elmira, N. Y. (Furnace)
National Foundry & Furnace Co., Dayton, O.
●Northwestern Stove Repair Co., Chicago, Ill.
Omaha Stove Repair Works, Omaha, Neb.
●Peerless Foundry Co., Indianapolis, Ind.
Peninsular Stove Co., Detroit, Mich.
Pittsburgh Furnace Parts Co., Pittsburgh, Pa.
Portland Stove Foundry Co., Portland, Me.
Shamblen Furnace Parts Co., Pittsburgh, Pa.
Stiglitz Furnace & Foundry Co., Louisville, Ky.
Stove Manufacturers Corporation, Newark, N. J.
Tri-State Heating Supply Co., Fort Wayne, Ind.

RETINNING EQUIPMENT and MATERIALS

Retinning Manufacturing Co., Chicago.

RIDGE ROLLS AND RIDGING (METAL)

●American Rolling Mill Co., Middletown, O. (Galvanized)
Ames Co., W. R., San Francisco, Cal.
Barnes Metal Products Co., Chicago, Ill.
Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.
●Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Div. of Republic Steel Corp., Canton, O.
●Bethlehem Steel Co., Bethlehem, Pa. (Metal)
Biersach & Niedermeyer Co., Milwaukee.
Chase Brass & Copper Co., Inc., Waterbury, Conn.
Downs-Smith Brass & Copper Co., New York City.
Edwards Mfg. Co., Inc., Cincinnati, O.
●Hussey & Co., C. G., Pittsburgh, Pa. (Copper)
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis
Lamb & Ritchie Co., Cambridge, Mass.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.
Newport Rolling Mill Co., Newport, Ky.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
●Osborn Co., J. M. & L. A., Cleveland, O.
Reeves Steel & Mfg. Co., Dover, O.
Riggin Metal Products, Inc., Kankakee, Ill.
St. Paul Corrugating Co., St. Paul, Minn.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Southbridge Roofing Co., Inc., Southbridge, Mass.
Southern States Iron Roofing Co., Savannah, Ga.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Van Noorden Co., E., Boston, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco, Cal.
Woolwine Metal Products Co., Los Angeles, Cal.
Youngstown Sheet & Tube Co., Youngstown, O.

RIDGE VENTILATORS

See Ventilators, Roof, Ridge

RIVETS, ALLOY

Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
●Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Millidale, Conn.
General Plate Div. Metals & Controls Corp., Attleboro, Mass.
Hassall, Inc., John, Brooklyn.
National Screw & Mfg. Co., Cleveland.
Republic Steel Corp., Cleveland, O.
Townsend Co., New Brighton, Pa.
Tubular Rivet & Stud Co., Wollaston, Mass.

RIVETS, ALUMINUM

Aluminum Company of America, Pittsburgh, Pa.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Bridgeport Screw Co., Bridgeport, Conn.
Chicago Rivet & Machine Co., Bellwood, Ill.
Continental Screw Co., New Bedford, Mass.
Hassall, Inc., John, Brooklyn, N. Y.
Townsend Co., New Brighton, Pa.
Tubular Rivet & Stud Co., Wollaston, Mass.

RIVETS, BRASS, COPPER AND IRON

Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Blake & Johnson Co., Waterville, Conn.
Bridgeport Screw Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Chicago Rivet & Machine Co., Bellwood, Ill.
Clendenin Brothers, Inc., Baltimore. (Brass, Copper)
Conklin Brass & Copper Co., Inc., T. E., New York City.
Continental Screw Co., New Bedford, Mass.
Downs-Smith Brass & Copper Co., New York City.
Hassall, Inc., John, Brooklyn, N. Y.
●Hussey & Co., C. G., Pittsburgh, Pa.
National Screw & Mfg. Co., Cleveland, O.
Taunton & Company, Inc., John H., New York City.
Tubular Rivet & Stud Co., Wollaston, Mass.

RIVETS, STEEL

Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Atlantic Steel Company, Atlanta, Ga.
Atlas Bolt & Screw Co., Cleveland, O.
●Bethlehem Steel Co., Bethlehem, Pa.
Chicago Rivet & Machine Co., Bellwood, Ill.
Clark Bros. Bolt Co., Millidale, Conn.
National Screw & Mfg. Co., Cleveland.
Republic Steel Corporation, Cleveland.
Townsend Co., New Brighton, Pa.
Tubular Rivet & Stud Co., Wollaston, Mass.

ROD, GAS WELDING

Air Reduction Sales Co., New York City.
American Agile Corporation, Cleveland.
●American Brass Co., Waterbury, Conn.
American Steel & Wire Co., Cleveland.
Atlantic Steel Company, Atlanta, Ga.
Bastian-Blessing Co., Chicago.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn
Crucible Steel Co. of America, New York City.
Duraloy Co., Scottdale, Pa. (Stainless)
Eutectic Welding Alloys Company, New York City.
Imperial Brass Mfg. Co., Chicago, Ill.
International Nickel Co., Inc., New York City. (Monel)
Linde Air Products Co., The, New York City.
Maurath, Inc., Cleveland, O.
Milburn Co., Alexander, Baltimore, Md.
Modern Engineering Co., St. Louis.
National Cylinder Gas Co., Chicago.
Page Steel & Wire Div., Monessen, Pa. (Stainless Steel)
Republic Steel Corporation, Cleveland, O.
Revere Copper and Brass Incorporated, New York City.
Seneca Wire & Mfg. Co., Fostoria, Ohio.
Torchweld Equipment Div., National Cylinder Gas Co., Chicago, Ill.
●Universal Power Corporation, Cleveland.
Wickwire Spencer Steel Co., New York City.
●Youngstown Sheet & Tube Co., Youngstown, O.

ROLLER BEARINGS

See Bearings, Roller

ROOFING, ALUMINUM

Air-O-Cel Industries, Inc., Detroit.
Fingles Co., The, Baltimore, Md.

ROOFING, BUILT-UP

Air-O-Cel Industries, Inc., Detroit.
Barber Co., Inc., Philadelphia, Pa.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Bird & Son, Inc., East Walpole, Mass.
Cabot, Inc., Samuel, Boston, Mass.
Carey, Co., Philip, Lockland, Ohio.
Certain-teed Products Corp., New York City.
Detroit Steel Products Co., Detroit.
Flintkote Co., New York City.
Ford Roofing Products Co., Chicago.
Johns-Manville, New York City.
Koppers Co., Pittsburgh. (Pitch and Felt)
Lehon Company, Chicago.
Logan-Long Co., Chicago, Ill.
National Mfg. Corp., Tonawanda, N. Y.
Nelson Mfg. Co., B. F., Minneapolis.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Robertson Co., H. H., Pittsburgh, Pa.
Ruberoid Co., New York City.
Southport Paint Co., Savannah, Ga.
United States Gypsum Co., Chicago, Ill.

ROOFING, COPPER

●American Brass Co., Waterbury, Conn.
Braden Mfg. Co., Terre Haute, Ind.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Copper Roofs Corp., Milwaukee.
Downs-Smith Brass & Copper Co., New York City.
Edwards Mfg. Co., Inc., Cincinnati, O.
Fingles Co., The, Baltimore, Md.
●Hussey & Co., C. G., Pittsburgh, Pa.
Klauer Manufacturing Co., Dubuque, Ia.
Milcor Steel Co., Milwaukee, Wis.
National Brass & Copper Co., Inc., Lisbon, O.
New Haven Copper Co., Seymour, Conn.
Perkinson & Brown, Chicago.
Revere Copper and Brass Incorporated, New York City.

ROOFING, IRON

●American Rolling Mill Co., Middletown, O.
Berger Mfg. Div., Republic Steel Corp., Canton, O.
Byers Co., A. M., Pittsburgh, Pa. (Wrought Iron)
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
International Steel Company, Evansville, Ind.
Martin Metal Mfg. Co., Wichita, Kan.
New Delphos Manufacturing Co., Delphos, Ohio.
Republic Steel Corp., Cleveland, O.
Southern States Iron Roofing Co., Savannah, Ga.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.

ROOFING, LEAD

Alpha Metal & Rolling Mills, Inc., Brooklyn.
Andrews Lead Co., Inc., Long Island City.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Copper Roofs Corporation, Milwaukee.
Eagle-Picher Lead Co., Cincinnati, Ohio.
Fingles Co., The, Baltimore, Md.
Flemm Lead Co., Inc., Long Island City, N. Y.
National Lead Co., New York City.
Northwest Lead Company, Seattle, Wash.
Revere Copper and Brass Incorporated, New York City.
Rochester Lead Works, Rochester, N. Y.
Standard Rolling Mills, Inc., Brooklyn, N. Y.

ROOFING, SLATE

Barrett Division, Allied Chemical & Die Corp., New York City. (Surfaced Shingles and Rolls)
Chapman Slate Co., Bethlehem, Pa.
Flemm Lead Company, Inc., Long Island City, N. Y.
Jackson-Bangor Slate Co., Pen Argyl, Pa.
North Bangor Slate Co., Bangor, Pa.
Norton Brothers, Granville, N. Y.
Perkinson & Brown, Chicago.
Rising & Nelson Slate Co., West Pawlet, Vt.
Sheldon Slate Products Co., Inc., Granville, N. Y.
Structural Slate Co., Pen Argyl, Pa.
Vendor Slate Co., Inc., Nazareth, Pa.
Vermont Structural Slate Co., Inc., Fair Haven, Vt.

ROOFING, STEEL

Allegheny Ludlum Steel Corp., Pittsburgh.
●American Rolling Mill Co., Middletown, Ohio.
Apollo Steel Company, Apollo, Pa.
Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.
Berger Mfg. Div. Republic Steel Corp., Canton, Ohio.
●Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Columbia Steel Co., Sub. U. S. Steel Corp., San Francisco.
●Continental Steel Corp., Kokomo, Ind.
Detroit Steel Products Co., Detroit.
Edwards Manufacturing Co., Inc., Cincinnati.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Inland Steel Company, Chicago.
International Steel Company, Evansville, Ind.
Jones & Laughlin Steel Corp., Pittsburgh.
Klauer Manufacturing Co., Dubuque, Ia.
LaCrosse Steel Roofing & Corrugating Co., LaCrosse, Wis.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee.
New Delphos Manufacturing Co., Delphos, Ohio.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
Perkinson & Brown, Chicago.
Reeves Steel & Mfg. Co., Dover, Ohio.
Republic Steel Corp., Cleveland, O.
Robertson Co., H. H., Pittsburgh.
St. Paul Corrugating Co., St. Paul, Minn.
Southern States Iron Roofing Co., Savannah, Ga.
●Superior Sheet Steel Co. Div. Continental Steel Corp., Canton, O.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Truscon Steel Co., Youngstown, Ohio.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corporation, Wheeling, W. Va.

ROOFING, TERNE PLATE

Berger Mfg. Div., Republic Steel Corp., Canton, Ohio.
●Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Klauer Manufacturing Co., Dubuque, Ia.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee.
New Delphos Manufacturing Co., Delphos, Ohio.
Republic Steel Corp., Cleveland, O.
Southern States Iron Roofing Co., Savannah, Ga.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Wheeling Corrugating Company, Wheeling, W. Va.
Wheeling Metal & Mfg. Co., Moundsville, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

ROOFING, TILE (CLAY & CONCRETE)

Hood Co., B. Mifflin, Daisy, Tenn. (Clay)
Ludowici-Celadon Co., Chicago, Ill.
Murray Tile Co., Cloverport, Ky.
National Fireproofing Corp., Pittsburgh.
Perkinson & Brown, Chicago.
Truscon Laboratories, Detroit.
United States Gypsum Co., Chicago.

ROOFING, TIN

Berger Mfg. Div. of Republic Steel Corp., Canton, O.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Klauer Manufacturing Co., Dubuque, Ia.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
New Delphos Manufacturing Co., Delphos, Ohio.
Perkinson & Brown, Chicago.
Republic Steel Corp., Cleveland, O.
Southern States Iron Rfg. Co., Savannah, Ga.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.

ROOFING, ZINC

American Zinc Products Co., Greencastle, Ind.
Barnes Metal Products Co., Chicago, Ill.
Edwards Mfg. Co., Inc., Cincinnati.
Illinois Zinc Co., Chicago.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
New Jersey Zinc Co., New York City.
Southern States Iron Rfg. Co., Savannah, Ga.
Wheeling Corrugating Co., Wheeling, W. Va. (Coated)
Wheeling Steel Corp., Wheeling, W. Va. (Coated)

RUST PROTECTION FOR METALS

See Chemicals, Rust Preventive

SAFETY GLASS

See Glass, Safety

SANDERS

See Buffers, Grinders, Polishers and Sanders

SAVERS, HEAT

Barclay, Inc., Robert, Chicago.
Cary Mfg. Co., Waupaca, Wis.
●Condensation Engineering Corp., Chicago, Ill.
Crown Fuel Saver Co., Richmond, Ind.
Gerhardt, W. F., Richmond, Va.
Harvey-Whipple, Inc., Springfield, Mass.
Kewanee Boiler Corporation, Kewanee, Ill.
●Leader Iron Works, Inc., Decatur, Ill.
Meyers Fuel Saver Co., Inc., Janesville, Wis.
Reynolds Electric Co., Chicago.
Roberts-Hamilton Co., Minneapolis, Minn.
Stainless & Steel Products Co., St. Paul, Minn.
Woolery Machine Co., Minneapolis, Minn.

SAWS, BAND, SHEET METAL CUTTING

Atkins and Co., E. C., Indianapolis, Ind.
Barnes, W. O., Detroit.
Continental Machines Incorporated, Minneapolis. (Rotary)
Grob Brothers, Grafton, Wis.
Disston & Sons, Inc., Henry, Tacony Sta., Philadelphia.
Racine Tool & Machine Co., Racine, Wis.
Tannewitz Works, Grand Rapids, Mich.
●Wells Mfg. Corp., Three Rivers, Mich.

SAWS, HACK, POWER

Atkins and Co., E. C., Indianapolis, Ind.
Champion Blower & Forge Co., Lancaster, Pa.
Clemenson Bros., Inc., Middletown, N. Y.
Disston & Sons, Inc., Henry, Tacony Sta., Philadelphia.
Racine Tool & Machine Co., Racine, Wis.
Robertson, F. L., Buffalo.
Royersford Foundry & Machine Co., Royersford, Pa.
Syntron Co., Homer City, Pa. (Electric, semi-portable)
●Wells Manufacturing Corp., Three Rivers, Mich.

SCREENS, SUN REFLECTING

Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.

SCREWS, DRIVE

American Screw Co., Providence, R. I.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Continental Screw Co., New Bedford, Mass.
Corbin Screw Corp., New Britain, Conn.
Elco Tool & Screw Corporation, Rockford, Ill.
Hassall, Inc., John, Brooklyn, N. Y.
Hillwood Manufacturing Co., Cleveland.

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National Lock Co., Rockford, Ill.
National Screw & Mfg. Co., Cleveland, O.
●Parker-Kalon Corp., New York City. (Hardened Metallic)
Pheoll Manufacturing Co., Chicago.
Townsend Co., New Brighton, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.

SCREWS, FEED, STOKER

Bros Boiler & Mfg. Co., Wm., Minneapolis.
Burnside Steel Foundry Co., Chicago.
Chicago Steel Foundry Co., Chicago.
Davy Fuel & Supply Co., Stoker Div., Detroit.
Farrell-Cheek Steel Co., Stoker Parts Div., Sandusky, Ohio.
Wyoming Stoker Worm Co., Wyoming, Pa.

SCREWS, SELF-TAPPING

American Screw Co., Providence, R. I.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Continental Screw Co., New Bedford, Mass.
Corbin Screw Corporation, New Britain, Conn.
Elco Tool & Screw Corporation, Rockford, Ill.
National Lock Co., Rockford, Ill.
National Screw & Mfg. Co., Cleveland, O.
●Parker-Kalon Corp., New York City.
Pheoll Manufacturing Co., Chicago.
Shakeproof, Inc., Chicago, Ill.
●United States Register Co., Battle Creek, Mich.

SCREWS, SHEET METAL

Aluminum Co. of America, Pittsburgh, Pa. (Aluminum)
American Screw Co., Providence, R. I.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y. (Stainless Steel)
Continental Screw Co., New Bedford, Mass.
Corbin Screw Corporation, New Britain, Conn.
Elco Tool & Screw Corporation, Rockford, Ill.
National Lock Co., Rockford, Ill.
National Screw & Mfg. Co., Cleveland, O.
●Parker-Kalon Corp., New York City.
Pheoll Manufacturing Co., Chicago.
Shakeproof, Inc., Chicago.
Townsend Co., New Brighton, Pa.
●United States Register Co., Battle Creek, Mich.

SEAMER MACHINES

See Machines, Seaming

SETTING DOWN MACHINES

See Machines, Setting Down

SHEARS, CIRCLE, HAND

●Crescent Tool Co., Jamestown, N. Y.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
●Wiss & Sons Co., J., Newark, N. J.

SHEARS, CIRCLE, POWER

●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork-Whiting Div., Whiting Corp., Harvey, Ill.
Yoder Company, Cleveland.

SHEARS, HAND AND BENCH

See Snips and Shears, Bench and Hand

SHEARS AND PUNCHES COMBINED

See Punches and Shears Combined

SHEARS, ELECTRIC, PORTABLE

●Black & Decker Mfg. Co., Towson, Md.
G. D. S. Machinery & Supply Co., New York City.
Independent Pneumatic Tool Co., Chicago.
O'Neil Irwin Manufacturing Co., Minneapolis.
●Stanley Electric Tool Div., The Stanley Works, New Britain, Conn.
Van Dorn Electric Tool Co., Towson, Md.

SHEARS, ROTARY, SLITTING, HAND

●Marshalltown Manufacturing Co., Marshalltown, Ia.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Rafter Machine Co., Belleville, N. J.
Wagner, C. DeWitt, Cedar Rapids, Iowa.

SHEARS, SQUARING, FOOT

Bertsch & Co., Cambridge City, Ind.
●Niagara Machine & Tool Works, Buffalo.
●Peck, Stow & Wilcox Co., Southington, Conn.
Royersford Foundry & Machine Co., Royersford, Pa.

SHEARS, SQUARING, POWER

Beatty Machine & Mfg. Co., Hammond, Ind.
Bertsch & Co., Cambridge City, Ind.
Bliss & Co., E. W., Toledo, Ohio.
Cincinnati Shaper Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland.
Excelsior Tool and Machine Co., East St. Louis, Ill.
●Niagara Machine & Tool Works, Buffalo.
O'Neil Irwin Manufacturing Co., Minneapolis.
●Peck, Stow & Wilcox Co., Southington, Conn.
Streine Tool & Mfg. Co., New Bremen, Ohio.
●Whitney Metal Tool Company, Rockford, Ill.

SHEET METAL PARTS

See Mouldings and Trim; also Stampings, Metal

SHEETS, ALUMINUM

Aluminum Company of America, Pittsburgh, Pa.
American Nickeloid Company, Peru, Ill.
Fairmont Aluminum Co., Fairmont, W. Va.

SHEETS, CLAD

Allegheny Ludlum Steel Corp., Pittsburgh.
Aluminum Company of America, Pittsburgh.
American Nickeloild Company, Peru, Ill. (Nickel, Chromium, Brass, Copper)
General Plate, Div. Metals & Controls Corp., Attleboro, Mass.
Granite City Steel Company, Granite City, Illinois.
Ingersoll Steel & Disc Div. Borg-Warner Corp., Chicago.
Jessop Steel Co., Washington, Pa. (Stainless)
Lukens Steel Co., Coatesville, Pa.

SHEETS, COPPER

●American Brass Co., Waterbury, Conn.
American Nickeloid Co., Peru, Ill.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Downs-Smith Brass & Copper Co., Inc., New York City.
●Hussey & Co., C. G., Pittsburgh, Pa.
National Brass & Copper Co., Inc., Lisbon, O.
New Haven Copper Co., Seymour, Conn.
Revere Copper and Brass Incorporated, New York City.
U. S. Brass & Copper Co., Hyde Park, Mass.
Western Cartridge Co., East Alton, Ill. (Brass, Bronze, Phosphor Bronze)

SHEETS, COPPER, LEAD COATED

●American Brass Co., Waterbury, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Downs-Smith Brass & Copper Co., New York City.
●Hussey & Co., C. G., Pittsburgh, Pa.
Lamb & Ritchie Co., Cambridge, Mass.
Ledkote Products Co., Long Island City, N. Y.
National Brass & Copper Co., Inc., Lisbon, O.
New Haven Copper Co., Seymour, Conn.
Revere Copper & Brass Incorporated, New York City.
U. S. Brass & Copper Co., Hyde Park, Mass.

SHEETS, GALVANNEALED

Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
●Continental Steel Corp., Kokomo, Ind.
Republic Steel Corp., Cleveland, O.
Sharon Steel Corp., Sharon, Pa.
●Superior Sheet Steel Co., Canton, O.

SHEETS, LEAD

Alpha Metal & Rolling Mills, Inc., Brooklyn.
American Smelting and Refining Co., New York City
Andrews Lead Co., Inc., Long Island City, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Down-Smith Brass & Copper Co., Inc., New York City.
Eagle-Picher Lead Co., Cincinnati, O.
Flemm Lead Co., Inc., Long Island City, N. Y.
Lissberger & Son, Inc., Marks, Long Island City, N. Y.
National Lead Co., New York City.
Northwest Lead Company, Seattle, Wash.
Revere Copper and Brass Incorporated, New York City.
Rochester Lead Works, Rochester, N. Y.
Standard Rolling Mills, Inc., Brooklyn, N. Y.

● Advertisement in this issue. See Index to Advertisers, page 252

SHEETS, MONEL

International Nickel Company, Inc., New York City.

SHEETS, SPECIAL METAL

(Nickel Zinc, Chrome Zinc, Nickel Coated Copper, Chromium Coated Copper, Nickel Coated Steel, Chromium Coated Steel, Chromium Coated Nickel Silver, Zinc Brass, Zinc Copper, etc.)

Allegheny Ludlum Steel Corp., Pittsburgh.
•American Brass Co., Waterbury, Conn. (Copper-Silicon Alloys)
American Nickeloid Co., Peru, Ill.
Apollo Metal Works, Chicago. (Nickel Zinc, Chrom Zinc, Nickel Copper, Chrom Copper, Chrom Steel, Nickel Steel, Nickel Tin, Chrom Tin)
Apollo Steel Co., Apollo, Pa.
•Bethlehem Steel Co., Bethlehem, Pa.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn. (Muntz Metal, Nickel Silver, Phosphor Bronze)
•Hussey & Co., C. G., Pittsburgh, Pa.
Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago, Ill.
Lukens Steel Co., Coatesville, Pa.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Maysteel Products, Inc., Mayville, Wis.
National Sheet Metal Co., Peru, Ill.
Republic Steel Corp., Cleveland, O.
Western Cartridge Co., East Alton, Ill. (Non Ferrous)
Wilder Manufacturing Company, Niles, O.

SHEETS, STAINLESS

Allegheny Ludlum Steel Corp., Pittsburgh.
•American Rolling Mill Co., Middletown, Ohio.
Barium Stainless Steel Corp., Canton, O.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Colonial Alloys Co., Philadelphia.
Crucible Steel Co. of America, New York City. (Two-Ply)
Eastern Rolling Mill Co., Baltimore, Md.
Ingersoll Steel & Disc Div. Borg-Warner Corp., Chicago, Ill.
Jessop Steel Co., Washington, Pa.
Lukens Steel Company, Coatesville, Pa.
Republic Steel Corp., Cleveland, O.
•Ryerson & Son, Inc., Jos. T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
Superior Steel Corp., Pittsburgh, Pa.
Universal-Cyclops Steel Corp., Bridgeville, Pa.

SHEETS, STEEL

(Polished and Blue, Corrugated and Plain, Black, Terne and Galvanized)

•American Rolling Mill Co., Middletown, O.
Apollo Steel Co., Apollo, Pa.
•Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Columbia Steel Co., San Francisco, Cal.
•Continental Steel Corp., Kokomo, Ind.
Crucible Steel Company of America, New York City.
Empire Sheet & Tin Plate Co., Mansfield, O.
Granite City Steel Co., Granite City, Ill.
Great Lakes Steel Corporation, Detroit.
Inland Steel Co., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Lukens Steel Co., Coatesville, Pa.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Newport Rolling Mill Co., Newport, Ky.
Niles Rolling Mill Co., Niles, O.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
Reeves Steel & Mfg. Co., Dover, O.
Republic Steel Corp., Cleveland, O.
Sharon Steel Co., Sharon, Pa.
•Superior Sheet Steel Co., Canton, O. (Galvanized, Hot Rolled and Long Ternes)
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Wood Steel Company, Alan, Conshohocken, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, STEEL, COPPER BEARING

•American Rolling Mill Co., Middletown, O.
•Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Columbia Steel Co., San Francisco, Cal.
•Continental Steel Corp., Kokomo, Ind.
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., Chicago, Ill.
Lukens Steel Co., Coatesville, Pa.
Newport Rolling Mill Co., Newport, Ky.
Reeves Mfg. Co., Dover, O.
Republic Steel Corp., Cleveland, O.
Sharon Steel Co., Sharon, Pa.
•Superior Sheet Steel Co., Canton, O.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, TIN PLATE

Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
•Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Columbia Steel Co., Sub. U. S. Steel Corp., San Francisco.
Crucible Steel Company of America, New York City.
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (Tinned)
Lyon, Conklin & Co., Inc., Baltimore, Md.
Republic Steel Corp., Cleveland, O.
Rochester Lead Works, Inc., Rochester, N. Y.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, ZINC

American Nickeloid Co., Peru, Ill.
American Zinc Products Co., Greencastle, Ind.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Downs-Smith Brass & Copper Co., Inc., New York City.
Hegeler Zinc Co., Danville, Ill.
Illinois Zinc Co., Chicago, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
New Jersey Zinc Co., New York City.

SHIELDS, WARM AIR REGISTER

Gammeter Co., W. F., Cadiz, O. (With Humidifier)
Gillian Mfg. Co., Detroit.
Kauffman Air Conditioning Corp., St. Louis, Mo.
Marshallan Mfg. Co., Cleveland.
Pentecost & Craft Co., Terre Haute, Ind.
Schoedinger, F. O., Columbus, O.
Swing-A-Way Steel Products, Inc., Chicago (with filter).

SHINGLES AND TILE, METAL

Ames Company, W. R., San Francisco.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Columbian Enameling & Stamping Co., Terre Haute, Ind.
Edwards Manufacturing Co., Inc., Cincinnati, O.
Fingles Co., The, Baltimore, Md.
Globe Iron Roofing & Corrugating Co., Newport, Ky. (galvanized and painted terne)
Herbert & Sons, T. L., Nashville, Tenn.
•Miller & Doing, Inc., Brooklyn, N. Y.
New Haven Copper Co., Seymour, Conn. (Copper)
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Reeves Steel & Mfg. Co., Dover, O. (Galvanized)
Sheet Metal Mfg. Co., Inc., Brooklyn.
Southern States Iron Roofing Co., Savannah, Ga..
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala. (Galv. Steel)
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Wheeling Corrugating Co., Wheeling, W. Va.
Williams-Wallace Co., San Francisco, Cal. (Painted tin and galv.)

SHRINKING MACHINES

See Machines, Shrinking

SHUTTERS

See Louvres and Shutters

SHUTTERS & DOORS, FIRE

See Doors and Shutters, Fire

SKYLIGHT LIFTS

See Lifts, Skylight

SKYLIGHTS

Acme Tin Plate & Roofing Supply Co., Philadelphia, Pa.
American Sheet Metal Works, New Orleans, La.
Anderson Mfg. Co., Des Moines, Ia.
Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Edwards Mfg. Co., Inc., Cincinnati, O.
Falstrom Co., Passaic, N. J.
Fingles Co., The, Baltimore, Md.
Gehri Company, Tacoma, Wash.

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General Sheet Metal Works, Inc., Bridgeport, Conn. (Puttyless)
Goethel Co., Alfred C., Milwaukee, Wis.
Herbert & Sons, T. L., Nashville, Tenn.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
International Steel Co., Evansville, Ind.
Klauer Mfg. Co., Dubuque, Ia.
LaCrosse Steel Roofing & Corrugating Co., LaCrosse, Wis.
Lee & Son Co., Thomas, Cincinnati, O.
Main Cornice Works, Los Angeles, Cal.
Martin Metal Mfg. Co., Wichita, Kan.
Mesker & Co., Geo. L., Evansville, Ind.
Midwest Aluminum Products, Inc., Milwaukee.
Milcor Steel Co., Milwaukee, Wis.
Moeschl-Edwards Corrugating Co., Inc., Cincinnati.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
Northern Furnace & Supply Co., Billings, Mont.
●Perkinson & Brown, Chicago.
Riester & Thesmacher Co., Cleveland.
Riggin Metal Products, Inc., Kankakee, Ill.
Robertson Co., H. H., Pittsburgh, Pa. (Structural)
Ryniker Sheet Metal Works, Inc., Billings, Mont.
St. Paul Corrugating Co., St. Paul, Minn.
Schoedinger, F. O., Columbus, O.
Southbridge Roofing Co., Inc., Southbridge, Mass.
Steinhorst & Sons, Inc., Emil, Utica, N. Y.
Van Noorden Co., E., Boston, Mass.
Vent-O-Lite Co., Chicago. (Ventilating, Industrial, Puttyless)
Ward Co., H. H., Chester, Pa.
Willis Steel Corporation, Galesburg, Ill.
York Corrugating Co., York, Pa.

SLEEVE BEARINGS

See Bearings, Sleeve

SLITTING MACHINES

See Machines, Slitting

SMOKE PIPE

See Pipe, Smoke

SNIPS AND SHEARS, BENCH AND HAND

Armstrong-Blum Mfg. Co., Chicago, Ill.
Bartlett Mfg. Co., Detroit, Mich.
Bergman Tool Mfg. Co., Buffalo.
●Beverly Shear Co., Chicago, Ill.
●Bremil Mfg. Co., Erie, Pa. (Shears)
Class Shear Co., Fremont, O. (hand)
Compton Shear Co., W. H., Newark, N. J.
●Crescent Tool Co., Jamestown, N. Y.
G. D. S. Machinery & Supply Co., New York City.
Grobet File Corp. of America, New York City.
Klenk's Aviation Snips, Wilmington, Del.
●Marshalltown Mfg. Co., Marshalltown, Ia.
●Niagara Machine & Tool Works, Buffalo, N. Y.
Packham Crimper Company, Mechanicsburg, Ohio (Rotary Snips)
●Peck, Stow & Wilcox Co., Southington, Conn.
Penn Tool Company, Philadelphia.
Reiner & Campbell Co., Inc., Elizabeth, N. J.
St. Louis Tool Co., St. Louis, Mo.
Service Machine Co., Elizabeth, N. J.
Snap-On Tools Corporation, Kenosha, Wis.
Viking Shear Co., Erie, Pa. (Shears)
●Wiss & Sons Co., J., Newark, N. J.

SNOW GUARDS

See Guards, Snow

SOLDER

●Allen Co., Inc., L. B., Chicago, Ill. (Aluminum and Stainless Steel)
Alpha Metal & Rolling Mills, Inc., Brooklyn.
●American Brass Co., Waterbury, Conn.
American Smelting & Refining Co., New York City. (Lead-Silver and Silver)
American Solder & Flux Co., Philadelphia, Pa. (paste)
Andrews Lead Co., Inc., Long Island City, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y. (all kinds)
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conklin Brass & Copper Co., Inc., T. E., New York City
Downs-Smith Brass & Copper Co., New York City.
Eagle-Picher Lead Co., Cincinnati, O. (Bar and Wire)
Eastern States Supply Co., Brooklyn, N. Y.
Empire Metal Co., Syracuse, N. Y.
Flemm Lead Co., Inc., Long Island City.
Galv-Weld, Incorporated, Dayton, Ohio.
Gardiner Metal Co., Chicago, Ill.
Glaser Lead Co., Inc., Brooklyn, N. Y.
Handy & Harman, New York City. (silver)
Jiggers, Inc., Chicago. (Kit)
Johnson Co., Lloyd S., Chicago.
Johnston Tin Foil & Metal Co., St. Louis, Mo.
Kester Solder Co., Chicago, Ill. (Bar, Solid, Self-Fluxing, Wire)
Klauer Mfg. Co., Dubuque, Ia.
Lenk Mfg. Company, Newton Lower Falls, Mass.
Lissberger & Son, Inc., Marks, Long Island City, N. Y.
Lukens Metal Co., Thos. F., Philadelphia, Pa.
Merchant & Evans Co., Philadelphia, Pa.
Motex Metal Process Corporation, Detroit.
National Lead Co., New York City.
New Delphos Manufacturing Co., Delphos, Ohio.
Northwest Lead Company, Seattle, Wash.
●Ruby Chemical Co., Columbus, O. (Acid and Rosin Core)
●Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Standard Rolling Mills, Inc., Brooklyn, N. Y.

SOLDERING COPPERS

See Coppers, Soldering

SOLDERING FLUX

See Flux, Soldering

SOLDERING FURNACES

See Furnaces, Soldering

SOLDERING IRONS

See Coppers, Soldering

SOLDERING TORCHES

See Torches, Soldering

SOLENOID VALVES

See Valves, Solenoid

SOUND LEVEL INDICATORS

See Indicators, Sound Level

SPOT WELDERS

See Welders, Spot

SPRAY GUNS

See Guns, Spray

SQUARING MACHINES

See Machines, Squaring

STAMPINGS, METAL

Ackermann Manufacturing Company, Wheeling, W. Va.
Ames Co., W. R., San Francisco.
Anti-Corrosive Metal Products Co., Inc., Albany, N. Y.
Bossert Company, Inc., Utica, N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Commercial Shearing & Stamping Co., Youngstown, O.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Dayton Rogers Mfg. Co., Minneapolis, Minn.
Detroit Stamping Co., Detroit.
Edwards Mfg. Co., Inc., Cincinnati.
Friedley-Voshardt Co., Chicago, Ill.
General Blower Corp., San Francisco.
General Metal Products Co., St. Louis, Mo.
Gerock Bros. Mfg. Co., St. Louis.
Geuder, Paeschke & Frey Co., Milwaukee, Wis.
Gillian Mfg. Co., Detroit.
Globe Machine & Stamping Co., Cleveland, O.
Grammes & Sons, Inc., L. F., Allentown, Pa.
H P L Manufacturing Co., Cleveland.
Kirk & Blum Mfg. Co., Cincinnati, O.
Maysteel Products, Inc., Mayville, Wis.
●Miller & Doing, Inc., Brooklyn.
●Morrison Products, Inc., Cleveland.
Morrison Steel Products, Inc., Buffalo, N. Y.
Mullins Mfg. Co., Warren, O.
National Manufacturing & Engineering Co., Detroit.
New Delphos Manufacturing Co., Delphos, Ohio.
New Monarch Machine & Stamping Co., Des Moines, Ia.
Niles Steel Products Div., Republic Steel Corp., Niles, O.
●Osborn Co., J. M. & L. A., Cleveland, O.
●Schwitzer-Cummins Company, Indianapolis, Ind.
Standard Pressed Steel Co., Jenkintown, Pa.
●Standard Stamping & Perforating Co., Chicago, Ill.

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Tannewitz Works, Grand Rapids, Mich.
●United States Register Co., Battle Creek, Mich.
Waterman-Waterbury Co., Minneapolis.
Worcester Pressed Steel Co., Worcester, Mass.

STAMPINGS, STEEL FURNACE

Ackermann Manufacturing Company, Wheeling, W. Va.
Commercial Shearing & Stamping Co., Youngstown, O.
(Flanged and Dished Heads for Furnace Domes, Radiator Crescent Heads, Hat Pipes)

STEEL FRAMING

See Framing, for Housing Assemblies

STOKER CONTROLS

See Controls, Stoker

STOKER DRIVES

See Drives, Stoker

STOKER SCREWS OR WORKS

See Screws, Feed, Stoker

STOKERS, DOMESTIC

(Up to 61 lb. per hr.)

Advance Appliance Co., Inc., Peoria, Ill.
Air Conditioning & Stokers, Inc., St. Louis.
American Furnace Co., St. Louis.
Anchor Stove & Range Co., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Auburn Foundry, Inc., Stoker Div., Auburn, Ind.
Automatic Stoker Corp., Indianapolis, Ind.
Bardes Range & Foundry Co., E. H., Cincinnati, O.
Beckley Perforating Co., Garwood, N. J. (Anthracite)
Black Servant Stoker Co., St. Louis.
Bluffton Mfg. Co., Findlay, O.
Bovee Furnace Works, Waterloo, Ia.
Bros Boiler & Mfg. Co., Wm., Minneapolis, Minn.
Brownie Stoker Co., Decatur, Ill.
Brownell Co., Dayton, O.
Bryant Heater Co., Cleveland. (Coke)
Burnham Stoker Co., Vancouver, Wash.
Burnwell Corp., Allentown, Pa.
Butler Street Foundry & Iron Co., Chicago, Ill.
Canton Stoker Corporation, Canton, Ohio.
Carpenter Heating & Stoker Company, Cleveland.
Chicago Automatic Stoker Co., Inc., Chicago, Ill.
Coal-O-Matic Stoker Company, Trucksville, Pa. (Anthracite)
●Conco Corporation, Mendota, Ill.
Cooper & Cooper, Inc., Pittsfield, Mass. (Anthracite)
Crane Co., Chicago. (Bituminous & Anthracite)
Davy Fuel & Supply Co., Stoker Div., Detroit. (Bituminous)
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Dickson Coal Co., New York City.
●Dowagiac Steel Furnace Co., Dowagiac, Mich.
●Econ-O-Col Stoker Div. of Cotta Transmission Corp., Rockford, Ill.
Eddy Stoker Corp., Chicago, Ill.
Electric Furnace-Man, Inc., New York City.
Excelsior Stove & Mfg. Co., Quincy, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
Finnell Rotary Stokers, Inc., Elkhart, Ind.
Foy Stoker Mfg. Co., Chicago.
Freed Heater & Stoker Company, Collegeville, Pa. (Anthracite)
Frederick Iron & Steel Co., Frederick, Md.
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis.
Fuel Savers, Inc., Harrisburg, Pa.
Furnaceslave, Inc., Indianapolis, Ind.
Gehl Bros. Mfg. Co., West Bend, Wis.
General Machine Co., Inc., Emmaus, Pa.
General Stokers, Inc., Philadelphia. (Anthracite)
Green Colonial Furnace Co., Des Moines, Ia.
Grossenbacher Furnace Co., St. Louis.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hamilton Automatic Stoker Corp., Hamilton, O.
Heating Assurance, Spokane, Wash.
Hemp Co., Macomb, Ill.
Heritage Coal & Stoker Co., Chicago.
Hess Warming and Ventilating Co., Chicago, Ill.
Holcomb & Hoke Mfg. Co., Indianapolis, Ind.
Homer Furnace & Foundry Corp., Coldwater, Mich.
Ideal Furnace Co., Detroit.
Illinois Iron & Bolt Co., Chicago, Ill.
Iron Fireman Mfg. Co., Cleveland, O.
Jacobson Machine Works, Inc., A. E., Minneapolis, Minn.
Keith Furnace Co., Des Moines, Ia.
Kingston Products Corporation, Kokomo, Ind.
Kol-Master Corp., Oregon, Ill.
Leach Co., Oshkosh, Wis.
Link-Belt Co., Chicago, Ill.
McLouth Air Conditioning Corp., Lansing, Mich.
Malco Gear Co., Dolton, Ill.
●Meyer Furnace Co., Peoria, Ill.
ModernAire Co., Div. Des Moines Stove Repair Co., Des Moines, Ia.
Motorstokor Div. of Hershey Machine & Foundry Co., Manheim, Pa.
Muncie Gear Works, Inc., Muncie, Ind.
Murray Corporation of America, Detroit.
National Steam Pump Co., Upper Sandusky, O.
Northern Steel & Stoker Corp., Peoria, Ill.
Palmer Mfg. Co., Cleveland.
Peerless Mfg. Co., Louisville, Ky.
Plymouth Industries, Inc., Plymouth, Ind.
Pocahontas Fuel Co., Inc., Stoker Div., Cleveland.
Racine Stoker Mfg. Co., Racine, Wis.
Round Oak Co., Dowagiac, Mich.
Rudy Furnace Co., Dowagiac, Mich.
●Schwab Furnace Co., Milwaukee, Wis.
Schwab Safe Co., Lafayette, Ind.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Scott Engineering Co., Noblesville, Ind.
Scott-Newcomb, Inc., St. Louis, Mo.
Sinker-Davis Co., Indianapolis, Ind.
Souther Iron Co., E. E., St. Louis.
Steel Products Engineering Co., Springfield, O.
Stok-A-Fire Co., Inc., University City, Mo.
Stokerette Mfg. Co., Chicago, Ill.
Stoker-Lad, Inc., Tacoma, Wash.
Stokermatic Co., Salt Lake City, Utah.
Stoker Products, Inc., Decatur, Ill.
Susquehanna Engineering Co., Bloomsburg, Pa.
Toledo Stoker Co., Toledo, O.
Tropic-Air Stoker Co., Canton, Ohio.
U. S. Machine Corporation, Lebanon, Ind.
Wayne Oil Burner Co., Fort Wayne, Ind.
Will-Burt Co., Orrville, O.
York Ice Machinery Corporation, York, Pa.

STOKERS, INDUSTRIAL AND COMMERCIAL

(61 lb. to 300 lb. per hr.)

Advance Appliance Co., Inc., Peoria, Ill.
American Coal Burner Co., Chicago, Ill.
American Engineering Co., Philadelphia.
Anchor Stove & Range Co., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Auburn Foundry, Inc., Stoker Div., Auburn, Ind.
Automatic Stoker Corp., Milwaukee.
Babcock & Wilcox Co., New York City.
Bluffton Mfg. Co., Findlay, O.
Bros Boiler & Mfg. Co., Wm., Minneapolis, Minn.
Brownell Co., Dayton, O.
Burke Stoker & Mfg. Co., Chicago.
Burnham Stoker Co., Vancouver, Wash.
Butler Street Foundry & Iron Co., Chicago, Ill.
Canton Stoker Corp., Canton, O.
Carpenter Heating & Stoker Company, Cleveland.
Chicago Automatic Stoker Co., Inc., Chicago, Ill.
Coal-O-Matic Stoker Co., Trucksville, Pa. (Anthracite)
●Conco Corporation, Mendota, Ill.
Crown Iron Works, Minneapolis, Minn.
Detroit Stoker Co., Detroit and Monroe, Mich.
Diamond Castings Co., Johnsonburg, Pa.
●Econ-O-Col Stoker Div. of Cotta Transmission Corp., Rockford, Ill.
Eddy Stoker Corp., Chicago, Ill.
Electric Furnace-Man, Inc., New York City.
Fairbanks, Morse & Co., Chicago, Ill.
Firemood Machine Wks., Converse, Ind.
Flynn & Emrich Co., Baltimore, Md.
Frederick Iron & Steel Co., Frederick, Md.
Front Rank Furnace Div., Liberty Foundry Co., St. Louis.
Fuel Savers Inc., Harrisburg Pa.
Gehl Bros. Mfg. Co., West Bend, Wis.
General Machinery Co., Spokane, Wash.
Grand Rapids Blow Pipe and Dust Arrester Co., Grand Rapids, Mich.
●Hall-Neal Furnace Co., Indianapolis, Ind.
Hamilton Automatic Stoker Corp., Hamilton, O.
Hare Stoker Corp., Detroit, Mich.
Heating Assurance, Spokane, Wash.
Hemp Co., Macomb, Ill.
Heritage Coal & Stoker Co., Chicago.
Hoffman Combustion Eng. Co., Detroit.
Holcomb & Hoke Mfg. Co., Indianapolis, Ind.
Illinois Iron & Bolt Co., Chicago, Ill.
International Engineering Wks., Inc., Framingham, Mass.
Iron Fireman Mfg. Co., Cleveland, O.
Jacobson Machine Works, Inc., A. E., Minneapolis, Minn.
Kingston Products Corporation, Kokomo, Ind.
Kol-Master Corp., Oregon, Ill.
Leach Co., Oshkosh, Wis.
Leffel & Co., James, Springfield, O.
Link-Belt Co., Chicago, Ill.
McLouth Air Conditioning Corp., Lansing, Mich.
Mallory Sales Co., Dolton, Ill.
Marion Machine, Foundry & Supply Co., Marion, Ind.
Mesker & Co., Geo. L., Evansville, Ind.

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●Meyer Furnace Co., Peoria, Ill.
ModernAire Co. Div. Des Moines Stove Repair Co., Des Moines, Ia.
Motorstokor Div. of Hershey Machine & Foundry Co., Manheim, Pa.
Muncie Gear Works, Inc., Muncie, Ind.
National Steam Pump Co., Upper Sandusky, O.
Neemes Foundry Inc., Troy, N. Y.
Northern Steel & Stoker Corp., Peoria, Ill.
Ormsby-Osterman Co., St. Louis, Mo.
Over-Spred Stoker Co., Ottawa, Ill.
Patterson Foundry & Machine Co., East Liverpool, O.
Perfection Grate & Stoker Co., Springfield, Mass.
Plymouth Industries, Inc., Plymouth, Ind.
Pocahontas Fuel Co., Inc., Cleveland.
Racine Stoker Mfg. Co., Racine, Wis.
Riley Stoker Corp., Worcester, Mass.
Rosedale Fdry. & Mach. Co., N. S., Pittsburgh, Pa.
Rudy Furnace Co., Dowagiac, Mich.
Schwab Safe Co., Lafayette, Ind.
●Schwitzer-Cummins Co., Indianapolis, Ind.
Sinker-Davis Co., Indianapolis, Ind.
Steel Products Engineering Co., Springfield, O.
Stok-A-Fire Co., Inc., University City, Mo.
Stokermatic Co., Salt Lake City, Utah.
Stoker Products, Inc., Decatur, Ill.
Sun-Fire Stoker Corporation, New Albany, Ind.
Susquehanna Engineering Co., Bloomsburg, Pa.
Taylor Engineering Co., Cincinnati, O.
Tropic-Air Stoker Co., Canton, Ohio.
U. S. Machine Corporation, Lebanon, Ind.
Wayne Oil Burner Co., Fort Wayne, Ind.
Will-Burt Co., Orrville, O.
York Ice Machinery Corporation, York, Pa.

STOVES

See Heaters

STRAINERS, CONDUCTOR

See Fittings and Accessories, Conductor

STRAPS, LEADER

See Fittings and Accessories, Conductor

SWITCHES, MAGNETIC

Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Electric Co., Hartford, Conn.
Automatic Switch Co., New York City.
Barber-Colman Company, Rockford, Ill.
Bender Warrick Corp., Birmingham, Mich.
Clark Controller Co., Cleveland.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Detroit Lubricator Co., Detroit, Mich.
Dunn Inc., Struthers, Philadelphia, Pa.
Electric Controller & Mfg. Co., Cleveland, O.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Inc., Philadelphia, Pa.
Hart Mfg. Co., Hartford, Conn. (Mercury Tube)
Industrial Engineering Corp., Terre Haute, Ind.
Jefferson Electric Co., Bellwood, Ill.
McDonnell & Miller, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller Co., Baltimore, Md.
Palmer Electric Co., Chicago.
Paragon Electric Co., Chicago.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Square D Co., Detroit, Mich.
Tork Clock Co., Inc., Mt. Vernon, N. Y.
Trumbull Electric Mfg. Co., Plainville, Conn.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
●White-Rodgers Electric Co., St. Louis, Mo.
Zenith Electric Co., Chicago.

SWITCHES, MANUAL

Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Electric Co., Hartford, Conn.
Barber-Colman Co., Rockford, Ill.
Bender Warrick Corp., Birmingham, Mich.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dual Remote Control Co., Wayne, Mich.
Durakool, Inc., Elkhart, Ind. (Mercury)
Electric Controller & Mfg. Co., Cleveland, O.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Industrial Engineering Corp., Terre Haute, Ind.
Square D Co., Detroit, Mich.
Trumbull Electric Mfg. Co., Plainville, Conn.
Ward Leonard Electric Co., Mount Vernon, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

SWITCHES, TIME

Allen-Bradley Company, Milwaukee, Wis.
Au-Temp-Co. Corp., New York City.
Automatic Temperature Control Co., Inc., Philadelphia.
Barber-Colman Co., Rockford, Ill.
Cooper Co., Clark, Palmyra, N. J.
Cramer Company, Inc., R. W., Centerbrook, Conn.
Detroit Lubricator Co., Detroit.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Gleason-Avery, Inc., Auburn, N. Y.
Guardian Electric Mfg. Co., Chicago, Ill.
Industrial Engineering Corp., Terre Haute, Ind.
International Register Co., Chicago.
●Mercoid Corp., Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
National Time & Signal Corp., Detroit.
Paragon Electric Co., Chicago, Ill.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Reliance Automatic Lighting Co., Racine, Wis.
Rhodes, Inc., M. H., Hartford, Conn.
Sampsel Time Control, Inc., Spring Valley, Ill.
Sangamo Electric Co. Springfield, Ill.
Spencer Thermostat Co., Attleboro, Mass.
Tork Clock Co., Inc., Mt. Vernon, N. Y.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
●White-Rodgers Electric Co., St. Louis.
Zenith Electric Company, Chicago.

TEES, FURNACE PIPE

See Fittings and Accessories, Furnace Pipe

TEMPERATURE CONTROLS

See Thermostats

TEMPERATURE RECORDERS

See Recorders, Temperature

TIMING MACHINES

See Motors, Timing

TINNING

See Baths, Tinning

TINPLATE

See Sheets, Tin

TIPS, DAMPER

See Clips and Tips, Damper

THERMOMETERS, INDICATING

American Schaeffer & Budenberg Instrument Div., Manning, Maxwell & Moore, Inc., Bridgeport, Conn.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barclay, Inc., Robert, Chicago, Ill. (Flue Gas)
Bristol Co., Waterbury, Conn.
Brown Instrument Co., Div. of Minneapolis-Honeywell Reg. Co., Philadelphia, Pa.
Cooper Oven Thermometer Co., Pequabuck, Conn.
Defender Automatic Regulator Co., St. Louis.
Dickson Co., Chicago.
Fee & Stemwedel, Inc., Chicago.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York City.
H-B Instrument Co., Inc., Philadelphia, Pa.
Hill, E. Vernon, Chicago.
●Illinois Testing Laboratories, Inc, Chicago, Ill.
Leeds & Northrup Co., Philadelphia, Pa.
Marsh Corporation, Jas. P., Chicago.
Mason-Neilan Regulator Co., Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Moeller Instrument Co., Richmond Hill, New York City.
Palmer Co., Cincinnati.
Powers Regulator Company, Chicago. (Dial)
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York City.
Rochester Mfg. Co., Rochester, N. Y.
Sarco Company, Inc., New York City.
Scientific Instrument Co., Detroit.
Standard Thermometer, Inc., Boston.
Tagliabue Mfg. Co., C. J., Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Weston Electrical Instrument Corp., Newark, N. J.
Wheelco Instruments Co., Chicago.

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THERMOSTATS, DAY AND NIGHT, CLOCK

Au-Temp-Co Corp., New York City.
Barber-Colman Company, Rockford, Ill.
Detroit Lubricator Co., Detroit, Mich.
●General Controls Co., Glendale, Cal.
General Electric Co., Bloomfield, N. J.
Gleason-Avery, Inc., Auburn, N. Y.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Sampsel Time Control, Inc., Spring Valley, Ill.
Schwab Safe Co., Lafayette, Ind.
Tork Clock Co., Inc., Mt. Vernon, N. Y.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis, Mo.

THERMOSTATS, HEAT ACCELERATED OR ANTICIPATING

Au-Temp-Co Corp., New York City.
●Automatic Products Co., Milwaukee, Wis.
Barber-Colman Company, Rockford, Ill.
Cook Electric Co., Chicago, Ill.
Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md.
Fulton Syphon Co., Knoxville, Tenn.
●General Controls Co., Glendale, Cal.
General Electric Co., Bloomfield, N. J.
H-B Instrument Co., Inc., Philadelphia, Pa.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Precision Thermometer and Instrument Co., Philadelphia.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Co., Attleboro, Mass.
Tagliabue Mfg. Co., C. J., Brooklyn.
●White-Rodgers Electric Co., St. Louis, Mo.

THERMOSTATS, LINE VOLTAGE

American Instrument Co., Silver Spring, Md.
Au-Temp-Co Corp., New York City.
●Automatic Products Co., Milwaukee, Wis.
Barber-Colman Company, Rockford, Ill.
Detroit Lubricator Co., Detroit, Mich.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
General Electric Co., Bloomfield, N. J.
H-B Instrument Co., Inc., Philadelphia, Pa.
Jefferson Electric Co., Bellwood, Ill.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
●Perfex Corp., Milwaukee, Wis.
Perfex Corp., Milwaukee, Wis.
Russell Electric Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Sarco Company, Inc., New York City.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Co., Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White-Rodgers Electric Co., St. Louis, Mo.

THERMOSTATS, LOW VOLTAGE

American Instrument Co., Silver Spring, Md.
Au-Temp-Co Corp., New York City,
●Automatic Products Co., Milwaukee, Wis.
Barber-Colman Company, Rockford, Ill.
Cook Electric Co., Chicago, Ill.
Crise Electric Mfg. Co., Columbus, Ohio.
Detroit Lubricator Co., Detroit, Mich.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
General Electric Co., Bloomfield, N. J.
Gleason-Avery, Inc., Auburn, N. Y.
H-B Instrument Co., Inc., Philadelphia, Pa.
Jefferson Electric Co., Bellwood, Ill.
McCorkle Co., D. H., Berkeley, Cal.
Magnet Switch Co., Chicago.
●Mercoid Corporation, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
●Penn Electric Switch Co., Goshen, Ind.
Perfex Corp., Milwaukee, Wis.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Sarco Company, Inc., New York City.
Schwab Safe Co., Lafayette, Ind.
Spencer Thermostat Co., Attleboro, Mass.
United Electric Controls Co., South Boston, Mass.
●White Manufacturing Co., St. Paul, Minn.
●White-Rodgers Electric Co., St. Louis, Mo.

THERMOSTATS, MODULATING OR PROPORTIONING

Atlas Valve Company, Newark, N. J. (Air Operated)
Au-Temp-Co Corp., New York City.
Barber-Colman Company, Rockford, Ill.
Defender Automatic Regulator Co., St. Louis.
H-B Instrument Co., Inc., Philadelphia, Pa.
Johnson Service Company, Milwaukee, Wis.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Schwab Safe Co., Lafayette, Ind.
Tagliabue Mfg. Co., C. J., Brooklyn.
●White Manufacturing Co., St. Paul, Minn.

THROUGH WALL FLASHINGS

See Flashings, Through Wall

TIME SWITCHES

See Switches, Time

TIMING MACHINES

See Machines, Timing, for Stoker Controls

TIMING MOTORS

See Motors, Timing

TINNING FLUXES

See Compounds, Tinning

TOGGLE BOLTS

See Bolts, Toggle

TOOLS, FIRING

●Adams Company, The, Dubuque, Iowa. (Clinker Tongs, Rakes, Hoes, Pokers, Ash Removers for Stokers)
Apfel & Company, Hamilton, Ohio. (Pokers, Rakes, Lighters, Clinker Tongs)
Farrell-Cheek Steel Company, Stoker Parts Div., Sandusky, O. (Clinker Tongs, Rakes, Hooks, Slice Bars, Pokers, Back-up Wrenches)
●Northwestern Stove Repair Co., Chicago.
Roesch & Associates, Inc., Syracuse, N. Y.
Stratton & Terstegge Co., Louisville, Ky. (Clinker Tongs)

TOOLS, METAL WORKERS'

Brown-Appton Company, New York City (Pneumatic Hammer)
●Champion Tool Co., Los Angeles, Cal. (Pipe Crimper)
Chicago Pneumatic Tool Co., New York City. (Pneumatic Hammer)
●Crescent Tool Co., Jamestown, N. Y. (Scratch Awls, Pliers, Screw-drivers)
Greenlee Tool Co., Rockford, Ill. (Pipe Benders, Chisels, Screw Drivers)
Grobet File Corp. of America, New York City. (Files)
Haines Gauge Company, Inc., Philadelphia. (Thickness Gauges)
Hauck Manufacturing Co., Brooklyn. (Asphalt and Pitch Kettles)
Hub Specialty Co., Somerville, Mass. (Awl)
Interstate Sales Co., New York City. (Angle Meters, Circle Meter Divizor, Mechanic's Protractor)
Johnson Ladder & Shoe Co., Eau Claire, Wis. (Ladder Shoes)
Millers Falls Co., Greenfield, Mass. (Hack Saws)
Misener Mfg. Co., Inc., Syracuse, N. Y. (Rotary Hack Saw and Blades, and Hole Saw for Metal and Wood)
Myers Ladder Equipment Company, Madison, Wis. (Ladder Brackets)
●Niagara Machine & Tool Works, Buffalo, N. Y.
Packham Crimper Co., Mechanicsburg, Ohio (Crimping Tongs)
●Peck, Stow & Wilcox Co., Southington, Conn.
Penn Tool Co., Philadelphia. (Punches, Chisels and Edge Tools)
Phillips Drill Co., Chicago. (Anchor Bolt Drill)
Poe, Ralph W., Canton, Ill. (Sheet Metal Cutters)
Reiner & Campbell Co., Inc., Elizabeth, N. J. (Dividers)
Snap-On Tools Corp., Kenosha, Wis. (Hammers, Screw Drivers, Chisels, Punches, Soldering Irons and Pliers, Hack Saws, Drills, Files, Bolt Cutters, Metal Shears, Tin Snips)
Stanley Tools, New Britain, Conn. (Punches, Hammers, Rules, Cold Chisels, Levels, Bit Braces)
Star Electric Motor Co., Bloomfield, N. J. (Drill Sharpener)
●Whitney Mfg. Co., W. A., Rockford, Ill.

● Advertisement in this issue. See Index to Advertisers, page 252

●Whitney Metal Tool Co., Rockford, Ill. (Aircraft Rivet Squeezer)
●Wodack Electric Tool Corp., Chicago. (Electric Hammer and Groover)

TOOLS, ROOFERS'

●Adams Company, Dubuque, Iowa. (Buckets)
Aeroil Burner Co., Inc., West New York, N. J. (Melting Kettles, Hoists, Buckets, Tools and Accessories)
Ajax Building Bracket Co., Cleveland Heights, Ohio (Brackets)
All States Roofers Equip. & Mat'l Co., Chicago. (Complete Line)
Belden Machine Company, New Haven, Conn. (Hammer, Ripper, Stake & Punch)
Eastern States Supply Co., Brooklyn, N. Y. (Mops, Hoist Wheel, Buckets, Dippers, Slaters' Tools, Tin Discs)
Eiermann Floor Scraper Co., Port Chester, N. Y. (Tar)
●Frey & Co., Frank P., Chicago.
Littleford Bros., Inc., Cincinnati, O.
Milcor Steel Co., Milwaukee, Wis.
●Niagara Machine & Tool Works, Buffalo, N. Y.
●Peck, Stow & Wilcox Co., Southington, Conn.
Structural Slate Co., Pen Argyl, Pa. (Hammer, Ripper and Stake, also Portable Machine Cutter and Punch)

TOPS, CHIMNEY

See Caps and Tops, Chimney

TORCHES, BRAZING, CUTTING, WELDING, ELECTRIC

Borm Manufacturing Company, Elgin, Ill.
Will-Weld Manufacturing Co., Omaha, Nebr.

TORCHES, BRAZING, CUTTING, WELDING, OXY-ACETYLENE

Aeroil Burner Co., Inc., West New York, N. J.
Air Reduction Sales Co., New York City.
Atkins and Company, Inc., E. C., Indianapolis, Ind.
Bastian-Blessing Co., Chicago.
Berns Co., Inc., Otto, Rochester, N. Y. (Brazing)
Burdett Mfg. Co., Chicago, Ill.
Clayton & Lambert Mfg. Co., Detroit.
Dockson Corporation, Detroit.
Eclipse Fuel Engineering Co., Rockford, Ill.
Harris Calorific Co., Cleveland, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Insto-Gas Corporation, Detroit.
Linde Air Products Co., The, New York City.
Marquette Manufacturing Co. Inc., Minneapolis.
Milburn Co., Alexander, Baltimore, Md.
Minn-Kota Foundry & Mfg. Co., Fargo, N. D.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas Co., Chicago.
Reiner & Campbell Co., Inc., Elizabeth, N. J.
Sight Feed Generator Co., Richmond, Ind.
Smith Welding Equipment Corp., Minneapolis, Minn.
Torchweld Equipment Div., National Cylinder Gas Co., Chicago, Ill.
Trindl Products, Ltd., Chicago.
Wall Chemicals Div., Liquid Carbonic Corp., Chicago.
Welding Apparatus Co., Chicago, Ill.

TORCHES, SOLDERING

Bastian-Blessing Co., Chicago.
Berns Co., Inc., Otto, Rochester, N. Y.
Choate Mfg. Co., Cincinnati, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Detroit Torch & Mfg. Co., Detroit, Mich.
Diener Mfg. Co., Geo. W., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Everhot Mfg. Co., Maywood, Ill.
Harris Calorific Co., Cleveland, O.
Ideal Commutator Dresser Co., Sycamore, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Insto-Gas Corporation, Detroit.
●Johnson Gas Appliance Co., Cedar Rapids, Ia.
Lenk Mfg. Company, Newton Lower Falls, Mass.
Linde Air Products Co., The, New York City.
Minn-Kota Foundry & Mfg. Co., Fargo, N. D.
Modern Engineering Co., St. Louis.
National Safety Device Co., Chicago.
Reiner & Campbell Co., Inc., Elizabeth, N. J.
Reliable Gas Products Co., Cedar Rapids, Ia.
Sight Feed Generator Co., Richmond, Ind.
Smith Welding Equipment Corp., Minneapolis, Minn.
Torchweld Equipment Div., National Cylinder Gas Co., Chicago, Ill.
Torit Manufacturing Co., St. Paul, Minn.
Turner Brass Works, Sycamore, Ill.
●Unique Manufacturing Co., Inc., Chicago (Gasoline)
Van Praag Sales, New York City.
Wall Chemicals Div., Liquid Carbonic Corp., Chicago.
Wall Mfg. Supply Co., P., N. S. Pittsburgh.
Welding Apparatus Co., Chicago Ill.

TRANSFORMERS, IGNITION

Davis & Co., Inc., Dean W., Chicago.
General Electric Co., Schenectady, N. Y.
Harvey, Inc., Sid, Valley Stream, N. Y.
Webster Electric Co., Racine, Wis.

TRANSFORMERS, LOW VOLTAGE

Barber-Colman Co., Rockford, Ill.
Canatsey Electric Manufacturing Co., Kansas City, Mo.
Cook Electric Co., Chicago, Ill.
Davis & Co., Inc., Dean W., Chicago.
Detroit Lubricator Co., Detroit, Mich.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal.
General Electric Co., Schenectady, N. Y.
Ideal Commutator Dresser Co., Sycamore, Ill.
Jefferson Electric Co., Bellwood, Ill.
●Mercoid Corporation, Chicago.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Pioneer Heat Regulator Div., Master Electric Co., Dayton, O.
Russell Electric Co., Chicago, Ill.
Taylor-Winfield Corp., Warren, O.
●Wagner Electric Corp., St. Louis, Mo.
Webster Electric Co., Racine, Wis.
Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

TRIM, ORNAMENTAL

See Moulding and Trim, Ornamental

TUBING, COPPER

●American Brass Co., Waterbury, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Incorporated, Waterbury, Conn.
Conklin Brass & Copper Co., Inc., T. E., New York City.
Downs-Smith Brass & Copper Co., Inc., New York City.
●Hussey & Co., C. G., Pittsburgh, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Lewin-Mathes Company, Lewin Metals Div., St. Louis, Mo.
McDonnell & Miller, Chicago.
Mueller Brass Co., Port Huron, Mich.
Parker Appliance Co., Cleveland.
Phelps Dodge Copper Products Corp., British American Tube Div., New York City.
Revere Copper & Brass Incorporated, New York City.
Roberts Tube Works, Detroit.
Scovill Mfg. Co., Morency-Van Buren Div., Sturgis, Mich.
United States Brass & Copper Co., Hyde Park, Mass.
Wolverine Tube Div., Calumet and Hecla Consolidated Copper Company, Detroit, Mich.

TUBING AND FITTINGS, PLASTIC

Acadia Synthetic Products Division, Chicago.
Celanese Celluloid Corp., New York City.
Dow Chemical Co., Midland, Mich.
Extruded Plastics, Inc., Norwalk, Conn.
General Electric Co., Plastics Div., 1 Plastics Ave., Pittsfield, Mass.
Hodgman Rubber Co., Framingham, Mass.
Imperial Brass Mfg. Co., Chicago.
Packless Metal Products Corporation, New Rochelle, N. Y.
Skuttle Manufacturing Co., Detroit.
United States Stoneware Co., Akron, Ohio, and New York City.
Werner Co., Inc., R. D., New York City.

UNITS, AIR CONDITIONING

See Air Conditioning Units

UNITS, FUEL FOR OIL BURNERS

Kraissl Company, Inc., Hackensack, N. J.
Monarch Manufacturing Works, Inc., Philadelphia.
Sundstrand Pump Division, Rockford, Ill.
Webster Electric Co., Racine, Wis.

UNITS, WINDOW VENTILATOR AND FILTER

Airgard Manufacturing Co., Chicago.
American Air Conditioning Co., Detroit.
Automatic Ventilator Company, Corunna, Mich.
Berger Mfg. Div., Republic Steel Corp., Canton, O.
Davies Air Filter Corp., New York, N. Y.
Fairbanks, Morse & Co., Chicago.
Gale Products, Galesburg, Ill.
General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.
Grainer, Inc., W. W., Chicago.
Ilg Electric Ventilating Co., Chicago.
Kaiser Co., H. S., Chicago, Ill.
Kauffman Air Conditioning Corp., St. Louis.
Mellish & Murray Co., Chicago.
Reed Unit-Fans, Inc., New Orleans, La.

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Reliable Sheet Metal Engineering Co., Chicago.
Somers, Inc., H. J., Detroit, Mich.
Unified Air Conditioner Co., Duluth, Minn.
Utility Fan Corporation, Los Angeles.
Vita-Screen Ventilator Co., New York City.

VACUUM CLEANERS FOR FURNACES

See Cleaners, Vacuum, Furnace

VALVES, GAS PRESSURE REGULATING

Atlas Valve Co., Newark, N. J.
●Barber Gas Burner Co., Cleveland, O.
Belfield Co., H., Philadelphia.
Brown Instrument Co., Div. Minneapolis-Honeywell Regulator Co., Philadelphia.
Bryant Corp., C. L., Cleveland, O.
Defender Automatic Regulator Co., St. Louis.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fisher Governor Co., Marshalltown, Ia.
Fox Control & Mfg. Co., Cleveland.
Friez & Sons, Julien P., Towson, Md.
Fulton Sylphon Co., Knoxville, Tenn.
●General Controls Co., Glendale, Cal.
Golden-Anderson Valve Specialty Co., Pittsburgh.
Hotstream Heater Co., Cleveland, O.
●Mercoid Corp., Chicago, Ill.
Milwaukee Gas Specialty Company, Milwaukee.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Co., Decatur, Ill.
Pacific Airmax Corporation, Huntington Park, Calif.
●Payne Furnace & Supply Co., Beverly Hills, Cal.
Perfex Corp., Milwaukee, Wis.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Tagliabue Mfg. Co., C. J., Brooklyn.

VALVES, HUMIDIFIER, WATER LEVEL

Badger Mfg. & Sales Co., Milwaukee.
Barclay, Inc., Robert, Chicago.
Belfield Co., H., Philadelphia.
Fisher Governor Co., Marshalltown, Ia.
G. & S. Tool Co., Detroit, Mich.
●General Controls Co., Glendale, Cal.
Golden-Anderson Valve Specialty Co., Pittsburgh.
Maid-O'-Mist, Inc., Chicago, Ill.
McDonnell & Miller, Chicago, Ill.
●Minneapolis-Honeywell Regulator Co., Minneapolis.
Monmouth Products Co., Cleveland, O.
Rockford Brass Works, Rockford, Ill.
Scovill Mfg. Co., Morency-Van Buren Div., Sturgis, Mich.
Skuttle Manufacturing Co., Detroit.
Supreme Electric Products Corp., Rochester, N. Y.
Viking Air Conditioning Corp., Cleveland.

VALVES, SOLENOID

Albright Equipment Co., Johnstown, Pa.
Alco Valve Co., St. Louis, Mo.
Anderson Products, Inc., Cambridge, Mass.
Au-Temp-Co Corp., New York City.
●Automatic Products Co., Milwaukee, Wis.
Automatic Switch Co., New York City.
Barber-Colman Co., Rockford, Ill.
Belfield Co., H., Philadelphia.
Cooper Co., Clark, Palmyra, N. J.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago.
Detroit Lubricator Co., Detroit, Mich.
Electric Valve Mfg. Co., Inc., New York City.
Electrimatic Division, The Simoniz Co., Chicago.
Frick Company, Waynesboro, Pa.
Friez & Sons, Julien P., Towson, Md.
●General Controls Co., Glendale, Cal. (Magnetic)
General Electric Co., Schenectady, N. Y.
General Sales & Products Co., Cohoes, N. Y.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Guardian Electric Mfg. Co., Chicago, Ill.
Hubbell Corp., Chicago.
Hunt & Son, C. B., Salem, O.
McDonnell & Miller, Chicago.
●Mercoid Corp., Chicago, Ill.
Milwaukee Gas Specialty Company, Milwaukee.
●Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Parker Appliance Co., Cleveland.
●Payne Furnace & Supply Co., Inc., Beverly Hills, Cal.
●Penn Electric Switch Co., Goshen, Ind.
Pfening Co., Fred D., Columbus, O.
R-S Products Corporation, Philadelphia.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Sarco Co., Inc., New York City.
Spoehrer-Lange Co., St. Louis.
Square D Company, Detroit.
Supreme Electric Products Corp., Rochester, N. Y.
Wheelco Instruments Co., Chicago.
●White-Rodgers Electric Co., St. Louis.

VANES, DUCT TURNING, PREFABRICATED

Air Devices, Inc., New York City.
Barber-Colman Company, Rockford, Ill.
Stewart Manufacturing Co., Orange, N. J. (Outlet Scoops)
●Tuttle & Bailey, Inc., New Britain, Conn.
Waterloo Register Company, Waterloo, Iowa.

VENETIAN BLINDS

See Blinds, Venetian

VENTILATORS, CEILING

Airmaster Corp., Chicago, Ill.
●Auer Register Co., Cleveland, O.
Barber-Colman Company, Rockford, Ill.
Best Register Co., Milwaukee, Wis.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Decatur Iron & Steel Co., Decatur, Ala.
Economy Electric Manufacturing Co., Cicero, Ill.
●Elgo Shutter & Manufacturing Co., Detroit.
Falstrom Co., Passaic, N. J.
Gillian Mfg. Co., Detroit.
●Hart & Cooley Mfg. Co., Holland, Mich.
Klauer Manufacturing Co., Dubuque, Ia.
Lamneck Products Co., Middletown, O.
Martin Metal Mfg. Co., Wichita, Kan.
Milcor Steel Co., Milwaukee, Wis.
Miller & Doing, Inc., Brooklyn, N. Y.
●Tuttle & Bailey, Inc., New Britain, Conn.
●United States Register Co., Battle Creek, Mich.
Universal Blower Co., Birmingham, Mich.

VENTILATORS, MUSHROOM

Aeolus Dickinson, Chicago, Ill.
Best Register Co., Milwaukee, Wis.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
Knowles Mushroom Ventilator Co., Montclair, N. J.
●Mueller Furnace Co., L. J., Milwaukee, Wis.
●Tuttle & Bailey, Inc., New Britain, Conn.
Ventilating Products Co., Chicago.

VENTILATORS, ROOF, FAN

Aeolus Dickinson, Chicago, Ill.
Air Conditioning Products Co., Detroit.
Air Controls, Inc., Cleveland.
Airmaster Corp., Chicago, Ill.
●Allen Corp., Detroit, Mich. (Turbine)
American Blower Corporation, Detroit.
American Coolair Corp., Jacksonville, Fla.
American-Larson Ventilating Co., Pittsburgh, Pa.
American Steel Band Co., Pittsburgh.
Arex Co., Chicago, Ill.
Autovent Fan & Blower, Div. Herman Nelson Corporation, Chicago.
Belanger Fan & Blower Co., Detroit, Mich.
Breidert Co., G. C., Los Angeles, Cal.
Burt Mfg. Co., Akron, O.
Century Fan & Ventilating Corp., New York City. (Turbine)
Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Clay Equipment Corp., Cedar Falls, Ia.
Davidson Hy Duty Roof Fan Co., Newton, Mass.
DeBothezat Ventilating Equipment Division, American Machine & Metals, Inc., East Moline, Ill.
Diehl Mfg. Company, Elizabethport, N. J.
Dual-Air Fan Corporation, Chicago.
Economy Electric Mfg. Co., Cicero, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Fingles Co., The, Baltimore, Md.
Gallaher Company, Owatonna, Minn. (Centrifugal)
Gehri Company, Tacoma, Wash.
Goethel Co., Alfred C., Milwaukee, Wis.
Grand Rapids Blow Pipe and Dust Arrester Co., Grand Rapids, Mich.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Howes-Woods Company, Cambridge, Mass.
Ilg Electric Ventilating Co., Chicago.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
International Engineering, Inc., Dayton, O.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Johnson Fan & Blower Corp., Chicago, Ill.
Jordan & Co., Paul R., Indianapolis, Ind. (Turbine)
Kernchen Co., Chicago, Ill.
King Ventilating Co., Owatonna, Minn.
Klauer Manufacturing Co., Dubuque, Ia.
Lohman Inc., William J., Irvington, N. J.
Mellish & Murray Co., Chicago.
Myers Electric Co., Pittsburgh, Pa.
New York Blower Co., Chicago.
Penn Ventilating Co., Philadelphia, Pa.
Phoenix Ventilator Co., Inc., Brooklyn, N. Y.
Propellair, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Robertson Co., H. H., Pittsburgh, Pa. (Round-Rectangular)
Royal Ventilator Co., Philadelphia, Pa.
●Schwitzer-Cummins Co., Indianapolis, Ind.

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●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
●Swartwout Co., Cleveland.
Trade-Wind Motor Fans, Inc., Los Angeles, Cal.
Trane Company, LaCrosse, Wis.
Trufio Fan Co., Harmony, Pa.
Uno Ventilator Co., Cliftondale, Mass. (Turbine)
Utility Fan Corporation, Los Angeles.
Van Noorden Company, E., Boston.
Viking Air Conditioning Corp., Cleveland, O.
Washburne & Co., E. G., New York City.
Waverly Heating Supply Co., Boston.
Western Engineering & Mfg. Co., Los Angeles, Cal.
Wing Mfg. Co., L. J., New York City.

VENTILATORS, ROOF, GRAVITY

A-J Manufacturing Co., Kansas City, Mo.
●Accurate Mfg. Works, Chicago, Ill.
Aeolus Dickinson, Chicago, Ill.
●Air Control Products, Inc., Coopersville, Mich.
Airtherm Mfg. Co., St. Louis, Mo.
●Allen Corp., Detroit, Mich. (Turbine)
American-Larson Ventilating Co., Pittsburgh, Pa.
American Metal Products, Fort Worth, Tex.
American Sheet Metal Works, New Orleans, La.
American Steel Band Co., Pittsburgh.
Ames Co., W. R., San Francisco, Cal.
Anderson Mfg. Co., Des Moines, Ia.
Arex Co., Chicago, Ill.
Autoforce Ventilating System, Boston.
●Berger Bros. Co., Philadelphia, Pa.
Breidert, G. C., Co., Los Angeles, Cal.
Burt Mfg. Co., Akron, O.
Century Fan & Ventilator Corp., New York City.
Chicago Metal Mfg. Co., Chicago, Ill.
Cincinnati Sheet Metal & Roofing Co., Cincinnati, O.
Clay Equipment Corp., Cedar Falls, Ia.
Day Co., The, Minneapolis, Minn.
Edwards Mfg. Co., Inc., Cincinnati, O.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Fingles Co., The, Baltimore, Md.
Gehri Company, Tacoma, Wash.
Goethel Co., Alfred C., Milwaukee, Wis.
Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich.
Hirschman Co., Inc., W. F., Buffalo, N. Y.
Howes-Woods Company, Cambridge, Mass.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
International Steel Co., Evansville, Ind.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Iwan Brothers, South Bend, Ind.
Jamar Co., Walker, Duluth, Minn.
Jordan & Co., Paul R., Indianapolis, Ind. (Turbine)
Kernchen Co., Chicago, Ill.
King Ventilating Co., Owatonna, Minn.
Klauer Manufacturing Co., Dubuque, Ia.
Kleenaire Corp., Stevens Point, Wis.
LaCrosse Steel Roofing & Corrugating Co., LaCrosse, Wis.
Lamneck Products, Inc., Middletown, O.
Lee & Son Co., Thomas, Cincinnati, O.
Leslie Welding Co., Chicago. (Slant Roof Louver)
Levow, David, New York City.
Lyon, Conklin & Co., Inc., Baltimore, Md.
Martin Metal Mfg. Co., Wichita, Kan.
Mellish & Murray Co., Chicago, Ill.
Merchant & Evans Co., Philadelphia, Pa.
Milcor Steel Co., Milwaukee, Wis.
Moeschl-Edwards Corrugating Co., Inc., Cincinnati.
Norman Sheet Metal Mfg. Co., W. F., Nevada, Mo.
●Osborn Co., J. M. & L. A., Cleveland.
Patten Co., J. V., Sycamore, Ill.
Penn Ventilating Company, Philadelphia.
Phoenix Ventilator Co., Inc., Brooklyn.
Pioneer Roofing & Sheet Metal Co., Muskogee, Okla.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Riggin Metal Products, Inc., Kankakee, Ill.
Robertson Co., H. H., Pittsburgh, Pa. (Monitor)
Royal Ventilator Co., Philadelphia, Pa.
Ryniker Sheet Metal Works, Inc., Billings, Mont.
St. Paul Corrugating Co., St. Paul, Minn.
Schoedinger, F. O., Columbus, O.
Sheet Metal Mfg. Co., Inc., Brooklyn.
Southbridge Roofing Co., Inc., Southbridge, Mass.
Southern States Iron Roofing Co., Savannah, Ga.
Standard Furnace & Supply Company, Omaha, Nebr.
Standard Ventilator Co., Lewisburg, Pa. (Rotary)
Steinhorst & Sons, Inc., Emil, Utica, N. Y.
●Swartwout Co., Cleveland.
Tierney Rotor Ventilator Co., Minneapolis, Minn.
Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.
Uno Ventilator Co., Cliftondale, Mass. (Turbine)
Van Noorden Co., E. Boston, Mass.
Western Engineering & Mfg. Co., Los Angeles.
Willis Steel Corporation, Galesburg, Ill.
York Corrugating Co., York, Pa.

VIBRATION ISOLATERS

See Bases and Pads

VENTILATORS, ROOF, RIDGE

Aeolus Dickinson, Chicago.
Arex Company, Chicago.
Burt Manufacturing Company, Akron, Ohio.
Century Fan & Ventilator Corp., New York City.
Gehri Company, Tacoma, Wash.
Klauer Mfg. Co., Dubuque, Ia.
Penn Ventilating Company, Philadelphia.
Robertson Company, H. H., Pittsburgh, Pa.
Royal Ventilator Co., Philadelphia.
●Swartwout Company, Cleveland.
Van Noorden Company, E., Boston.

WARM AIR REGISTER SHIELDS

See Shields, Warm Air Register

WASHERS, AIR, HEATING AND VENTILATING

(Capacity 4,000 c.f.m. and up)

Air & Refrigeration Corp., New York City.
Airwasher Corporation, Lansing, Mich.
American Blower Corp., Detroit, Mich.
Ames Co., W. R., San Francisco, Cal.
Atlas Heating & Ventilating Co., Ltd., San Francisco.
Ballantyne Co., Omaha, Nebr.
●Bayley Blower Co., Milwaukee, Wis.
Betz Air Conditioning Corp., Kansas City, Mo.
Bishop & Babcock Mfg. Co., Cleveland, O.
Blower Application Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
●Clarage Fan Co., Kalamazoo, Mich.
Columbus Heating & Ventilating Co., Columbus, O.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Industrial Sheet Metal Works, Inc., Detroit, Mich.
McLouth Air Conditioning Corp., Lansing, Mich.
Mellish & Murray Co., Chicago, Ill.
Murray Manufacturing Co., D. J., Wausau, Wis.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York City.
Northern Blower Co., Cleveland, O.
Parks-Cramer Co., Fitchburg, Mass.
Phillips Cooling Tower Co., Inc., New York City.
Ross Sprinkler Co., Pasadena, Cal.
Schmieg Sheet Metal Works, Detroit.
Spray Engineering Co., Somerville, Mass.
Spray Wheel Air Conditioners, Inc., Denver, Colo.
Strandwitz & Co., Inc., W. J., Camden, N. J.
●Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Supreme Heater & Ventilating Corp., St. Louis, Mo.
Trane Co., La Crosse, Wis.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
Vilter Mfg. Company, Milwaukee.
Western Blower Co., Seattle, Wash.
York Ice Machinery Corp., York, Pa.

WATERPROOFING

Angier Corporation, Framingham, Mass.
Barrett Division, Allied Chemical & Die Corporation, New York City.
Carey Mfg. Co., Philip, Lockland, Ohio.
●Cheney Metal Products Co., Trenton, N. J.
Eastern States Supply Co., Brooklyn, N. Y.
Flintkote Co., New York City.
General Insulating Products Co., Brooklyn, N. Y.
Glidden Company, Cleveland.
Horn Co., A. C., Long Island City.
Johns-Manville Sales Corp., New York City.
Koppers Company, Pittsburgh.
Lehon Company, Chicago.
Nebel Manufacturing Co., Cleveland.
Primoid Products Corp., New York City.
Ruberoid Co., New York City.
Sisalkraft Co., Chicago, Ill.
Sonneborn Sons, Inc., L., New York City.
Southport Paint Co., Savannah, Ga.
Toch Brothers, Inc., Elm Park, S. I., N. Y.
Truscon Laboratories, Detroit.
X-Pando Corporation, Long Island City, N. Y.

WATERPROOFING COMPOUNDS

See Compounds, Waterproofing

WATER HEATERS

See Coils, Fire Pot, Hot Water

WELDERS, ARC

Air Reduction Sales Company, New York City.
Allied Weld Crafts, Inc., Indianapolis, Ind.
Allis-Chalmers Manufacturing Company, Milwaukee.
Bear Mfg. Co., Rock Island, Ill.

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Borm Manufacturing Company, Elgin, Ill.
Burke Electric Co., Erie, Pa.
Coddington Manufacturing Co., E. D., Milwaukee.
Commonwealth Electric Welder Mfg. Co., Philadelphia. (A. C.)
•Eisler Engineering Co., Newark, N. J.
Electric Arc, Inc., Newark, N. J.
Emerson Electric Mfg. Co., St. Louis. (A. C.)
Ergolyte Mfg. Co., Philadelphia.
Fern, Ralph, Scranton, Pa.
General Equipment Co., Wichita, Kan.
General Electric Co., Schenectady, N. Y.
Hammett Electric Mfg. Co., Kansas City, Mo.
Hampton Electric Mfg. Co., Oakmont, Pa.
Harnischfeger Corp., Milwaukee, Wis. (Electric).
Hobart Brothers Co., Troy, O.
Hollup Corp., Div. National Cylinder Gas Co., Chicago.
Ideal Electric & Mfg. Co., Mansfield, O.
Lee Co., K. O., Aberdeen, S. D.
Lincoln Electric Co., Cleveland, O.
Maple Valley Mfg. Co., Mapleton, Ia.
Marquette Manufacturing Co., Inc., Minneapolis. (A. C.)
Miller Electric Mfg. Co., Inc., Appleton, Wis. (Portable)
Pier Equipment Mfg. Co., Benton Harbor, Mich.
Sight Feed Generator Co., Richmond, Ind.
Smith Welding Equipment Corp., Minneapolis, Minn.
Star Electric Motor Co., Bloomfield, N. J.
Trindl, Inc., Jos. H., Chicago.
Una Welding Incorporated, Cleveland.
•Universal Power Corporation, Cleveland.
Welding Apparatus Co., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Will-Weld Mfg. Co., Inc., Omaha, Nebr. (A. C.)
Wilson Welder & Metals Co., Inc., New York City.

WELDERS, SPOT

•Acme Electric Welder Co., Los Angeles.
Agnew Electric Co., Milford, Mich.
•Alphil Spot Welding Co., New York City.
Coddington Manufacturing Co., E. D., Milwaukee.
Dyer Welder & Engineering Co., Kansas City, Mo.
•Eisler Engineering Co., Newark, N. J.
Electric Arc, Inc., Newark, N. J.
Federal Machine & Welder Co., Warren, O.
Micro Products Co., Chicago, Ill.
Pier Equipment Manufacturing Co., Benton Harbor, Mich. (Foot operated and motor driven.)
Taylor-Hall Welding Corp., Worcester, Mass.
Taylor-Winfield Corp., Warren, O. (Butt and Seam)
Thomson-Gibb Electric Welding Co., Lynn, Mass.
•Universal Power Corporation, Cleveland.
Weldex, Inc., Detroit.
Westinghouse Electric & Manufacturing Co., East Pittsburgh.

WELDING EQUIPMENT, OXY-ACETYLENE

Air Reduction Sales Co., New York City.
Automatic Gasflux Mfg. Co., Mansfield, O.
Burdett Mfg. Co., Chicago, Ill.
Dockson Corporation, Detroit.
Harris Calorific Co., Cleveland, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Jewel Mfg. Co., St. Paul, Minn.
Linde Air Products Co., The, New York City.
Marquette Manufacturing Co., Inc., Minneapolis.
Milburn Co., Alexander, Baltimore, Md.
Modern Engineering Co., St. Louis, Mo.
Ransome Machinery Co., Industrial Div., Dunellen, N. J. (Welding Positioner)
Reiner & Campbell Co., Inc., Elizabeth, N. J.
Smith Welding Equipment Corp., Minneapolis, Minn.
Torchweld Equipment Div., National Cylinder Gas Co., Chicago, Ill.
Victor Equipment Co., San Francisco.
Wall Chemicals Div., Liquid Carbonic Corp., Chicago.

WELDING ROD

See Rod, Welding

WELDING TORCHES

See Torches, Brazing, Cutting, Welding

WHEELS, BLOWER

Advance Aluminum Castings Corp., Chicago, Ill.
Air Controls, Inc., Cleveland, O.
•Bayley Blower Co., Milwaukee, Wis.
Bishop & Babcock Mfg. Co., Cleveland, O.
Champion Blower & Forge Co., Lancaster, Pa.
•Clarage Fan Co., Kalamazoo, Mich.
Economy Electric Manufacturing Co., Cicero, Ill.
Hastings Air Conditioning Co., Inc., Hastings, Nebr.
Jaden Mfg. Co., Inc., F., Hastings, Nebr.
Janette Mfg. Co., Chicago, Ill.
Lau Blower Co., Dayton, O.
•Morrison Products, Inc., Cleveland.
New York Blower Co., Chicago.
Palmer Manufacturing Corp., Phoenix, Ariz.
Peerless Electric Co., Warren, O.
•Schwitzer-Cummins Co., Indianapolis, Ind.
•Sturtevant Co., B. F., Hyde Park, Boston, Mass
Torrington Mfg. Co., Torrington, Conn.
•Triangle Mfg. Co., Oshkosh, Wis.
U. S. Air Conditioning Corp., Minneapolis, Minn.
Utility Fan Corporation, Los Angeles, Cal.
Viking Air Conditioning Corp., Cleveland, O.
Western Blower Company, Seattle, Wash.

WINDOW FANS

See Fans, Window

WINDOWS, HEAT INSULATING

Advance Insulating Co., Pittsburgh.
Andersen Corp., Bayport, Minn.
Chamberlin Metal Weather Strip Co., Detroit.
Detroit Steel Products Co., Detroit, Mich.
Kane Mfg. Corp., Kane, Pa.
Libbey-Owens-Ford Glass Co., Toledo, O.
Mississippi Glass Company, New York City.
Russell Co., F. C., Cleveland, O.
Truscon Steel Co., Youngstown, O.

WINDOWS, HOLLOW METAL

American Sheet Metal Works, New Orleans, La.
Biersach & Neidermeyer Co., Milwaukee, Wis.
Herrmann & Grace Co., Brooklyn, N. Y.
International Steel Co., Evansville, Ind.
Kawneer Co., Niles, Mich.
Newman Brothers, Inc., Cincinnati, O.
Perkinson & Brown, Chicago, Ill.
Russell Co., F. G., Cleveland, O.
Truscon Steel Co., Youngstown, O.
Willis Steel Corporation, Galesburg, Ill.

WIRE GLASS

See Glass, Wire

WIRE, PLAIN, GALVANIZED AND COPPERED

Allegheny Ludlum Steel Corp., Pittsburgh. (Stainless)
Aluminum Co. of America, Pittsburgh, Pa. (Aluminum)
American Nickeloid Co., Peru, Ill. (Chrome, nickel coated)
American Steel & Wire Co., Cleveland.
Angell Nail & Chaplet Co., Cleveland.
Atlantic Steel Company, Atlanta, Ga.
Berger Mfg. Div. Republic Steel Corp., Canton, O.
•Bethlehem Steel Co., Bethlehem, Pa. (Plain, galvanized)
California Wire Cloth Corp., Oakland, Cal.
Columbia Steel Co., San Francisco, Cal.
•Continental Steel Corp., Kokomo, Ind. (Plain, galvanized steel)
Copperweld Steel Co., Glassport, Pa.
•Hussey & Co., C. G., Pittsburgh.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (Galvanized)
Laclede Steel Co., St. Louis.
Page Steel & Wire Div., Monessen, Pa.
Republic Steel Corp., Cleveland, O. (Steel)
Roebling's Sons Co., John A., Trenton, N. J.
Seneca Wire & Mfg. Co., Fostoria, O.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Townsend Co., New Brighton, Pa. (Plain and coppered)
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Wickwire Spencer Steel Co., New York City.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRING MACHINES

See Machines, Wiring

WRENCHES (SOCKET, OPEN END)

Snap-On Tools Corporation, Kenosha, Wis.

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Section of

American Artisan

1943 DIRECTORY OF WARM AIR HEATING, RESIDENTIAL AIR CONDITIONING AND SHEET METAL PRODUCTS

[Section 2—TRADE NAMES]

A

AAF—Air Filters. American Air Filter Co., Inc., Louisville, Ky.

ABC—Blower-Washer units. American Blower Corp., Detroit.

ABC—Air Conditioning Furnaces, Water Heaters, Oil Burners. Automatic Burner Corp., Chicago, Ill.

ACB—Metal Protecting Paint, Tropical Paint & Oil Co., Cleveland.

A/C—Washable Filters. American Air Filter Co., Inc., Louisville, Ky.

A-P Dependable—Controls. Automatic Products Company, Milwaukee.

AMS—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.

A-P—Controls, Motors, Thermostats, Valves. Automatic Products Co., Milwaukee, Wis.

A.R.A.—Asbestos Return Air Sheets. Grant Wilson, Inc., Chicago.

atc—Timing Systems. Automatic Temperature Control Co., Inc., Philadelphia.

"A. W."—Plates and Sheets. Alan Wood Steel Co., Conshohocken, Pa.

Abrasoweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Acco-Lastic—Caulking Compounds. Accurate Metal Weather Strip Co., New York, N. Y.

Ace-Pier—Arc and Spot Welders. Pier Equipment Mfg. Co., Benton Harbor, Mich.

Acid-Proof—Insulating Cement. Quigley Company, New York City.

Acolite (Bakelite)—Enamels. Acorn Refining Co., Cleveland.

Acratherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Activ-Air—Air Conditioning Furnaces. Heil Co., Milwaukee, Wis.

Activ-Flame—Oil Burners. Heil Co., Milwaukee, Wis.

Adacast—Refractories. Botfield Refractories Co., Philadelphia.

Adamant—Insulating Cement. Botsfield Refractories Co., Philadelphia.

Adapatch—Refractories. Botfield Refractories Company, Philadelphia.

Ada-Stic—Insulating Cement. Botsfield Refractories Co., Philadelphia.

Adjusto—Fire Pot Coils. Radiator Specialty Co., Charlotte, N. C.

Aeracool—Fan Blades, Fans, Louvres and Shutters, Ventilators. Myers Electric Co., Pittsburgh, Pa.

Aerisweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Aerocrat—Blowers, Louvres, Washers. W. R. Ames Co., San Francisco, Cal.

Aerofuse — Air Diffusers. Tuttle & Bailey, Inc., New Britain, Conn.

Aerolux—A. C. Furnaces. S. T. Johnson Co., Oakland, Cal.

Aeropel—Kitchen Exhaust Fans. American Blower Corp., Detroit, Mich.

Aeroplane—Ventilators. Paul R. Jordan & Co., Indianapolis, Ind.

Aeroplex—Blowers. Bayley Blower Co., Milwaukee, Wis.

Aeropull—Ventilators. Paul R. Jordan & Co., Indianapolis, Ind.

Aerospot—Fans. South Bend Air Products, Inc., South Bend, Ind.

Aerovalve—Ventilators. Knowles Mushroom Ventilator Co., Montclair, N. J.

Afco—Blowers, Blower-Filters, Furnaces and Stokers. American Furnace Co., St. Louis, Mo.

Afco Master-Gas — Furnaces. American Furnace Co., St. Louis.

Affco—Grilles, Louvres, American Foundry & Furnace Co., Bloomington, Ill.

Agile—Welding Electrodes. American Agile Corp., Cleveland.

Agitair—Air Diffusers. Air Devices, Inc., New York City.

Airacoustic—Insulation. Johns-Manville, New York City.

Airate—Ventilators. Aeolus Dickinson, Chicago.

Air-A-Way — Ventilators. American Metal Products, Fort Worth, Tex.

Airboy—Blower Filter. The Peerless Electric Co., Warren, Ohio.

Aircell—Duct Insulation. Norristown Magnesia & Asbestos Co., Norristown, Pa.

Airco—Electrodes, Soldering Flux, Welding Rod, Torches and Welding Equipment. Air Reduction Sales Co., New York City.

Air-Con—Heating & Ventilating Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Air Control—Air Conditioning Units, Bearings, Blowers, Blower-Filters, Blower Housings and Wheels. Hastings Air Conditioning Co., Inc., Hastings, Nebr.

Air-Dux—Prefabricated Ducts and Fittings. Wood Industries, Inc., Gar, Detroit.

Aire-Flo — Furnaces. Lennox Furnace Co., Marshalltown, Ia.

Aire-Flo—Furnaces. Lennox Furnace Co., Chicago.

Air-X-Hauster—Ventilators. G. C. Breidert Co., Los Angeles.

AireOzonet—Air Conditioning Furnace. AireOzone Corp., Cicero, Ill.

Aire-RAY-ator—Furnaces. Ray Oil Burner Co., San Francisco.

Airex—Air Conditioning Units, Blowers and Fans. Mountain States Equipment Co., Denver, Colo.

Airflo—Pipe, Fittings and Accessories. Milcor Steel Co., Milwaukee.

Airflo—Furnaces. Aladdin Heating Corp., Oakland, Cal.

Air-Fan—Window Ventilators. Reliable Sheet Metal Engineering Co., Chicago.

Air-Flo—Ventilators. Belanger Fan & Blower Co., Detroit.

Air Flo—Ventilators. Aeolus Dickinson, Chicago.

Airfoil—Fans and Fan Blades. Aerovent Fan Co., Piqua, O.

Air Force—Attic Fan. Vulcan Metal Products Co., Birmingham, Ala.

Airguide—Hygrometers and Thermometers. Fee & Stemwedel, Inc., Chicago, Ill.

Airidge—Ridge Ventilators. Aeolus Dickinson, Chicago.

Airistocrat—Fan Blades. Torrington Mfg. Co., Torrington, Conn.

Airjector—Ventilators. Swartwout Co., Cleveland.

Airkem—Chemical Odor Neutralizer. Airox Company, New York City.

Air Kooler—Evaporative Conditioners. Utility Fan Corporation, Los Angeles.

Air Lader—Louvers and Shutters. Edwin F. Guth Co., St. Louis.

Air-Lift—Blowers and Fans. Mauer Engineering, Evanston, Ill.

Airline—Furnaces. Joliet Heating Corp., Joliet, Ill.

Airline—Registers & Grilles. Tuttle & Bailey, Inc., New Britain, Conn.

Airlok—Mineral Wool. Plastergon Wall Board Co., Buffalo.

Air-Marvel—Fans. General Blower Co., Philadelphia, Pa.

Airmat—Filters. American Air Filter Co., Inc., Louisville, Ky.

Airmover—Blowers. Skuttle Mfg. Co., Detroit.

Air-O-Matic—Air Conditioning Units. Williams Oil-O-Matic Htg. Corp., Bloomington, Ill.

Airo-Flex—Directional Flow Registers. Auer Register Co., Cleveland.

Airotor — Blower Wheels. Torrington Mfg. Co., Torrington, Conn.

Air-Pak—Blower-Filter Units. Air Controls, Inc., Cleveland.

Airplex — Filters. Davies Air Filter Corp., New York, N. Y.

Airpyrator — Blowers. Burnwell Corp., Allentown, Pa.

Air-Seel—Oil Burners. Silent Glow Oil Burner Corp., Hartford, Conn.

Airstat—Controls. Minneapolis-Honeywell Regulator Co., Minneapolis.

Airstream — Blower Wheels. Morrison Products, Inc., Cleveland.

Air-Van — Roof Ventilators. Gallaher Co., Owatonna, Minn.

Air-Vane—Registers. Rock Island Register Co., Rock Island, Ill.

Airvulc—Concrete Waterproofing Paint. Self-Vulcanizing Rubber Co., Inc., Chicago, Ill.

Ajax — Prefabricated Ducts, Fittings, Metal Shingles. Cincinnati Sheet Metal & Roofing Co., Cincinnati.

Akron Air Blast—Furnaces. May-Fiebeger Co., Newark, Ohio.

Albron — Aluminum Paint. Aluminum Company of America, Pittsburgh.

Alclad—Sheets, Aluminum Company of America, Pittsburgh.

Alcoa—Aluminum Products. Aluminum Co. of America, Pittsburgh, Pa.

All-Alloy—Shears. Bremil Mfg. Co., Erie, Pa.

Allen-Flux—Soldering Flux. L. B. Allen Co., Inc., Chicago.

Allkote—Paint. Acme Refining Co., Cleveland.

All-Season—Air Conditioning Units. Fedders Mfg. Co., Buffalo.

All-Sol—Flux. L. B. Allen Co., Chicago.

Alltite—Insulation. Coast Insulating Corp., Los Angeles.

Allvent—Window Ventilating Fans. Autovent Fan & Blower Div., Herman Nelson Corp., Chicago.

All-Weather—Roof Cement, Caulking and Waterproofing Compounds, Roofing Paint. Ford Roofing Products Company, Chicago.

Alma — Furnace Brushes. Worcester Brush & Scraper Co., Worcester, Mass.

Almar—Hand Slitting Machines. Ward Machinery Co., Chicago, Ill.

Almetal—Fire Doors. Merchant & Evans Co., Philadelphia, Pa.

Alnor—Thermometers. Illinois Testing Laboratories, Inc., Chicago, Ill.

Alumaweld—Flux and Solder. Lloyd S. Johnson Co., Chicago.

Alumbrite—Paint. Thompson & Co., Pittsburgh, Pa.

Alumi-Flux—Soldering Flux. L. B. Allen Co., Chicago, Ill.

Alumin-nu—Metal Cleaner. NuSteel Company, Chicago.

Aluminweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Alumi-Soder—Aluminum Solder. L. B. Allen Co., Chicago.

Always Reliable—Soldering Furnaces, Mallets, Torches. Otto Berns Co., Inc., Rochester, N. Y.

Amco—Flux. American Solder & Flux Co., Philadelphia, Pa.

Amerock—Cabinet and Casing Hardware. American Cabinet Hardware Corp., Rockford, Ill.

Aminco—Anemometers. American Instrument Co., Silver Spring, Md.

Amirglass—Air Filters. Amirton Co., Elmsford, N. Y.

Ampco—Blow Pipe Collectors. American Metal Products Co., Fort Worth, Tex.

Am-Pe-Co—Blowers. American Machine Products Co., Marshalltown, Ia.

Amplifire—Gas Burner. Surface Combustion, Toledo, Ohio.

Anaconda—Copper and Brass Products. American Brass Co., Waterbury, Conn.

Anchor — Hangers. Royal-Apex Mfg. Corp., Brooklyn, N. Y.

Anchor Brand—Soldering Flux. Garden City Laboratory, Inc., Chicago.

Anchor Brand—Nails, Rivets. Townsend Co., New Brighton, Pa.

Anchor-Kolstoker—Stoker-fired Furnaces and Stokers. Anchor Stove & Range Co., New Albany, Ind.

Anderson—Spray Nozzles. B. F. Sturtevant Co., Hyde Park, Mass.

Annite—Metal Polisher. Quigley Company, Inc., New York City.

Anode—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Antoxide—Metal Protecting Paint. duPont de Nemours & Company, Wilmington, Del.

Apartvent — Window Ventilating Fans. Autovent Fan & Blower Div., Herman Nelson Corp., Chicago.

Apco—Caulking Compounds, Paint. Asphalt Products Co., Syracuse, N. Y.

Apex—Furnaces. Excelsior Steel Furnace Co., Chicago.

Apex—Furnaces & Heaters. Dallman Supply Co., Sacramento, Cal.

Apex — Quadrants. Ohio Products Co., Cleveland, O.

Apex—Hangers. Elbows and Fittings. Royal-Apex Mfg. Co., Brooklyn.

Apex Exl-Air—Furnaces. Excelsior Steel Furnace Co., Chicago.

Apexior—Paint. Dampney Co. of America, Hyde Park, Boston, Mass.

Apolloy—Copper Steel. Apollo Steel Company, Apollo, Pa.

Appton Super—Pneumatic Hammer. Brown-Appton Company, New York City.

Aqua Bar—Roof Cement. Continental Products Co., Euclid, O.

Aqua-Flo—Pumps. The Heil Co., Milwaukee.

Aqua-Master—Water Heaters. Century Eng. Corp., Cedar Rapids, Ia.

Aqua-Scale—Automatic Humidifier. J. P. Glasby Mfg. Co., Bloomfield, N. J.

Aqulux—Water Heaters. S. T. Johnson Co., Oakland, Cal.

Arc-Eng—Air Conditioning Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Architex—Venetian Blinds. Chicago Venetian Blind Co., Chicago.

Aremaster—Arc Welders. Bear Mfg. Co., Rock Island, Ill.

ArcoFlame—Oil Burners. American Rad. & Standard Sanitary Corp., Pittsburgh, Pa.

Arctic—Air Conditioning Units. Premier Furnace Co., Dowagiac, Mich.

Arex-Auxtor — Ventilators. Arex Company, Chicago.

Arin Accelerant—Louvers and Shutters. Arex Co.. Chicago.

Arin Stationary—Louvers and Shutters. Arex Co., Chicago.

Aristocrat—A. C. Furnaces. Henry Furn. & Fdy. Co., Cleveland.

Aristocrat—Gravity Registers. Auer Register Co., Cleveland, O.

Armco—Plates, Sheets. American Rolling Mill Co., Middletown, O.

Armco Ingot Iron—Roofing and Sheets. American Rolling Mill Co., Middletown, O.

Arm-Glaze—Glazing Compounds. Armstrong Co., Detroit.

Armorize—Paint. Carter Paint Co., Liberty, Ind.

Armstrong—Compressors. General Machinery Co., Spokane, Wash.

Arrow—Furnaces. Dowagiac Steel Furnace Co., Dowagiac, Mich.

Arrow—Ventilators. Uno Ventilator Co., Cliftondale, Mass.

Arrowtrol — Heating and Ventilating Registers. Register & Grille Mfg. Co.. Inc., Brooklyn, N. Y.

Artcraft—Blowers and Furnaces. Chicago Steel Furnace Co.,. Chicago, Ill.

Artisan—Flux. American Solder & Flux Co., Philadelphia, Pa.

Asbestocel—Furnace Insulation. Johns-Manville, New York City.

Asbestocite—Duct Board. Johns-Manville, New York City.

ABSO—Ventilators. American Steel Band Co., Pittsburgh.

Asco—Relays, Switches, Valves. Automatic Switch Co., New York, N. Y.

Ath-A-Nor — Furnaces. May-Fiebeger Co., Newark, Ohio.

Atomist—Humidifiers. American Foundry & Furnace Co., Bloomington, Ill.

Attic Louvers—Ventilators. Air Control Products. Inc., Coopersville, Mich.

Atticvane—Attic Fans. B. F. Sturtevant Co., Boston.

Auto—Humidifier Valves. Maid-O'-Mist, Inc., Chicago.

Autocoal—Stokers. Crane Co., Chicago.

Autocrat—Fan Blades. Torrington Mfg. Co., Torrington, Conn.

Autocrat—Oil Burners. Chandler Company, Cedar Rapids, Iowa.

Automatic—Air Conditioning Furnaces. Premier Furnace Co., Dowagiac, Mich.

Automatic June — Humidifiers. Monmouth Products Company, Cleveland.

Aviation—Snips. Penn Tool Co., Philadelphia.

Axifio—Fans. B. F. Sturtevant Co., Boston.

Axiom—Filters. Blocksom & Company, Michigan City, Ind.

B

BB—Blast Gates, Roof Clips, Damper Clips and Tips, Conductor Fittings and Accessories, Snow Guards. Berger Brothers Company, Philadelphia.

BCA—Ball Bearings. Bearing Co. of America, Lancaster, Pa.

B E—Blowers, Blower-Filters, Fans. Barrett Engineers, Cleveland Heights, O.

B. F. C.—Gas Burners. Moncrief Furnace & Mfg. Co., Dallas, Tex.

B-H—Insulating Cement. Baldwin-Hill Co., Trenton, N. J.

B-H Weatherseal—Waterproofing Compound. Baldwin-Hill Co., Trenton, N. J.

BO'B—Snips. Bergman Tool Mfg. Co., Buffalo.

B-W—Relays, Switches. Bender Warrick Corp., Birmingham, Mich.

B & W—Refractories & Stokers. Babcock & Wilcox Co. New York City.

Badger—Time Switches. Reliance Automatic Lighting Co., Racine, Wis.

Baers—Enamels, Lacquers and Paint. Baer Brothers New York City.

Baffle Mix—Refractories. Walsh Refractories Corp., St. Louis.

Ballard—Furnaces. Gilbert & Barker Mfg. Co., Springfield, Mass.

Balsam-Wool—Flexible Insulation. Wood Conversion Co., St. Paul.

Bankheat—Oil Burners. S. T. Johnson Co., Oakland, Cal.

Bantam—Motors. Small Motors, Inc., Chicago.

Bar-Brook—Fans, Evaporative Coolers. Shreveport Eng. Co., Inc., Shreveport, La.

Bardamp — Waterproofing Compounds. Acorn Refining Company, Cleveland.

Barlastic—Caulking Compounds. Barland Weatherstrip Material Co., Cleveland.

Barreled Sunlight—Paint and Enamel. U. S. Gutta Percha Paint Co., Providence, R. I.

Barry—Pillow Blocks, Pulleys. R. & J. Dick Co., Inc., Passaic, N. J.

Barthel — Soldering Furnaces and Torches. Van Praag Sales, New York City.

Barton—Blower-Filters, Furnace Blowers, Cabinets and Casings, Air Conditioning and Gravity Furnaces, Heaters, Housings and Stampings. National Mfg. & Engineering Co., Detroit.

Basmor — Air Conditioning Furnace. Bastian-Morley Co., Inc., LaPorte, Ind.

Battery—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Bear Cat—Booster Fans. Midwestern Supply Co., Chicago.

Beaver—Furnaces and Heaters. Danville Stove & Mfg. Co., Danville, Pa.

Beckett Commodore—Oil Burners. R. W. Beckett Eng. Co., Elyria, O.

Beehive—Roofing. Samuel Cabot, Inc., Boston, Mass.

Beloit—Machines, Punches, Tools. Hendley & Whittemore Co., Beloit, Wis.

Bemis — Furnace Brushes. Worcester Brush & Scraper Co., Worcester, Mass.

Benda-Vane—Registers. Rock Island Register Co., Rock Island, Ill.

Bend-Ezy—Grilles and Registers. Standard Stamping & Perforating Co., Chicago.

Bengal—Furnaces. Floyd-Wells Co., Ryersford, Pa.

Berloy—Building Products. Berger Mfg. Co., Div. Republic Steel Corp., Canton, O.

Berry-Cel—Insulation. F. E. Berry & Co., Everett, Mass.

Bertossa—Furnaces. Jackson & Church Co., Saginaw, Mich.

Best—Cast Iron Chimney Caps. Sterling Foundry Co., Sterling, Ill.

Beth-Cu-Loy—Sheets. Bethlehem Steel Co., Bethlehem, Pa.

Bethlehem Doe—Oil Burners. Bethlehem Fdy. & Mach. Co., Bethlehem, Pa.

Betterbuilt — Registers. Air Control Products, Inc., Cooperville, Mich.

Big Sioux—Furnaces. Iowa Foundry Co., Sioux City, Iowa.

Biltwel—Furnaces. Fraser & Johnston Co., San Francisco.

BI-MIX—Gas Burners. John Zink Co., Tulsa, Okla.

Bitugloss—Enamels & Lacquers. Wailes Dove-Hermiston Corp., Westfield, N. J.

Bitumastic No. 50—Compounds and Paint. Wailes Dove-Hermiston Corp., Westfield, N. J.

Bitumastic Black Solution — Paint. Wailes Dove-Hermiston Corp., Westfield, N. J.

Bitumastic Hi-Heat Gray—Paint. Wailes Dove-Hermiston Corp., Westfield, N. J.

Bituseal—Paint. Cheesman-Elliot Co., Inc., Brooklyn.

Black Diamond—Built-up Roofing. Barrett Div., Allied Chemical & Die Corp., New York, N. Y.

Black Diamond—Furnaces, Heaters. Maple City Furnace Co., Monmouth, Ill.

Black Diamond—Stokers. Beckley Perforating Co., Garwood, N. J.

Blo-Aire—Blower-Filter Units. Meyer Furnace Co., Peoria, Ill.

Blowertrol — Thermostatic Hydraulic Control. White Mfg. Co., St. Paul.

Blowette — Blower-Filter Units. Lau Blower Co., Dayton, Ohio.

Bluebird—Snips. Bergman Tool Mfg. Co., Buffalo.

Blue Coal—Conversion Grates. Delaware, Lackawanna & Western Coal Co.,. New York City.

Blue Flame—Rotary Oil Burners. Silent Glow Oil Burner Corp., Hartford, Conn.

Blue Knight—Enamels and Lacquers. Roxalin Flexible Finishes, Inc., Elizabeth, N. J.

Blue-Point—Drills, Tools. Snap-on Tools Corp., Kenosha, Wis.

BNCO—Metal Windows, Doors, Skylights, Welding and Sheet Metal Work. Biersach & Neidermeyer Co., Milwaukee, Wis.

Boiler Plate — Furnaces. Williamson Heater Co., Cincinnati, O.

Boomer—Furnaces, Heaters. Hess-Snyder Co., Massilon, O.

Boost-Aire—Fans. L. J. Mueller Furnace Co., Milwaukee.

Bower—Bearings. Ahlberg Bearing Co., Chicago.

Branford—Oil Burners. Malleable Iron Fittings Co., Branford, Conn.

Brees-Air—Fans. Buffalo Forge Co., Buffalo, N. Y.

Breese Hydroxilating—Oil Burners. Oil Devices, Chicago.

Breezo—Kitchen Exhaust Fans. Buffalo Forge Co., Buffalo, N. Y.

Brevolite—Crackle Finish Paint. Zapon Division Atlas Powder Co., North Chicago, Ill.

Brilliant Fire — Floor Furnaces and Heaters. Ohio Foundry and Mfg. Co., Steubenville, O.

Brookcell—Metal Ceilings. Brooklyn Metal Ceiling Co., Brooklyn, N. Y.

Brownskin—Waterproof Sheathing Paper. Angier Corp., Framingham, Mass.

Bull Dog—Snips and Shears. Wiss & Sons Co., Newark, N. J.

Bumble Bee—Welder. Wilson Welder & Metals Co.,. Inc., New York City.

Bung-Lo—Warm Air Furnaces. Geo. J. Cocking, Santa Ana, Cal.

Bunker Hill—Roofing, Sheets and Solder. Northwest Lead Co., Seattle, Wash.

Burks—Pumps. Decatur Pump Co., Decatur, Ill.

Burner-Set—Pilbrico Jointless Firebrick Co., Chicago.

Burnham—Pumps. Union Steam Pump Co., Battle Creek, Mich.

Butler—Furnaces. Ramey Mfg. Co., Columbus, O.

Butler—Stokers. Eddy Stoker Corporation, Chicago.

But-N-tite—Steel Roofing. St. Paul Corrugating Co., St. Paul.

Buzzer—Gas Soldering Furnaces. Charles A. Hones, Inc., Baldwin, N. Y.

C

CDC—Bearings, Couplings, Pulleys. Chicago Die Casting Company, Chicago.

C-H—Relays, Switches and Valves. Cutler-Hammer, Inc., Milwaukee, Wis.

CID—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

C J B—Bearings. Ahlberg Bearing Co., Chicago.

CP—Electric Tools. Chicago Pneumatic Tool Co., New York City.

C-10—High Temperature Paint. Laclede-Christy Clay Products Co., St. Louis.

Calktite—Caulking Compounds, U. S. Stoneware Co., Akron, Ohio.

Calorio—Furnaces. Marshall Furnace Co., Marshall, Mich.

Calorider—Air Conditioning Units. General Air Conditioning Corp., Cincinnati.

Calwico—Machinery Guards and Wire Cloth. California Wire Cloth Corp., Oakland, Cal.

Camel—Valves. C. L. Bryant Corp., Cleveland, O.

Cantilever — Hygrometers. Standard Thermometer, Inc., Boston.

Capillary—Air Conditioning Units, Filters, Washers. Air & Refrigeration Corp., New York City.

Capital—Furnaces. Farris Furnace Co., Springfield, Ill.

Capitol Rock Wool—Insulation. Standard Lime & Stone Co., Baltimore.

Capitolaire—Furnaces. United States Radiator Corp., Detroit.

Carbonaire—Oil Burners. Aldrich Co., Wyoming, Ill.

Careycel—Insulation. Philip Carey Co., Lockland, Ohio.

Careyclad — Metal Protecting Paint. Philip Carey Mfg. Co., Lockland, O.

Careyduct — Prefabricated Ducts and Fittings. Philip Carey Co., Lockland, Ohio.

Carter—Oil Burners. General Oil Heating Corp., West New York, N. J.

Carton Economy—Furnaces. International Heater Co., Utica, N. Y.

Castalu—Blower Wheels and Fans. Advance Aluminum Castings Corp., Chicago, Ill.

Castolin Autochemic—Soldering Flux. Eutectic Welding Alloys Co., New York City.

Castolin Eutectic—Electrodes and Welding Rod. Eutectic Welding Alloys Co., New York City.

Caulk-O-Seal — Caulking and Glazing Compounds. Calbar Paint & Varnish Co., Philadelphia, Pa.

Cauxeal — Compounds. X-Pando Corporation, Long Island City, N. Y.

Cello-Sponge—Evaporators. Viking Air Conditioning Corp., Cleveland.

Cell-U-Blanket — Insulation. Masonite Corp., Chicago.

Cellufoam—Duct Insulation. Masonite Corporation, Chicago.

Cementico—Concrete Waterproofing Paint. United States Gypsum Co., Chicago.

Cementseal—Enamels & Paint Acorn Refining Co, Cleveland.

Cementite—Paint. Thompson & Co., Pittsburgh, Pa.

Cementkote—Paint. Tropical Paint & Oil Co., Cleveland, O.

Cempro—Concrete Paint. Asphalt Products Co., Syracuse, N. Y.

Centripeller—Ventilating Fans. Paul R. Jordan & Co., Inc., Indianapolis.

Challenger — Domestic Stokers. Link Belt Co., Chicago.

Challenger—Stokers. Kol-Master Corp., Oregon, Ill.

Chamberlin—Automatic Humidifier. Chandler Co., Cedar Rapids, Ia.

Champion—Furnaces. Wheeling Furnace Corp., Martins Ferry, Ohio.

Charavay — Fans. Hartzell Propeller Fan Co., Piqua, O.

Checker Coat—Galvanized Steel Sheets. Superior Sheet Steel Co. Div. Continental Steel Corp., Canton, O.

Chicago—Brakes and Presses. Dreis & Krump Mfg. Co., Chicago, Ill.

Chicastic Castable—Refractory. Chicago Fire Brick Co., Chicago, Ill.

Chico Brikset—High Temperature Cement. Chicago Fire Brick Co., Chicago, Ill.

Chief—Furnaces. Joliet Heating Corp., Joliet, Ill.

Chieftain—Refrigerating Compressors. Tecumseh Products Co., Tecumseh, Mich.

Chinook—Heating Coils. Bayley Blower Co., Milwaukee, Wis.

Chinookfin—Heating Coils. Bayley Blower Co., Milwaukee, Wis.

Chromang—Electrodes. Arcos Corporation, Philadelphia.

Chromend—Electrodes. Arcos Corporation, Philadelphia.

Chromastic—Paint. Wailes Dove-Hermiston Corp., Westfield, N. J.

Chromastic Metal Primer—Paint. Wailes Dove-Hermiston Corp., Westfield, N. J.

Chromeweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Chromium 173 Silver—Aluminum Paint. C. H. Dragert Company, Inc., Brooklyn.

Chromlead—Enamels and Lacquers. Dragert Co., C. H., Inc., Brooklyn.

Chronat—Furnace and Boiler Repairs. National Fdry. & Furnace Co., Dayton, O.

Chronotherm — Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Chrysler-Airtemp—Heating and Cooling Equipment. Airtemp Div., Chrysler Corp., Dayton, Ohio.

Cibulas—Puttyless Skylights. General Sheet Metal Works, Inc., Bridgeport, Conn.

Circle T—Switches. Trumbull Electric Mfg. Co., Plainville, Conn.

Circo—Louvers & Shutters. Circulators & Devices Mfg. Corp., New York City.

CirCOOLator—Fans and Ventilators. Viking Air Conditioning Corporation, Cleveland, O.

Circulaire—Heaters. J. V. Patten Co., Sycamore, Ill.

Clason—Snow Guards. M. N. Cartier & Sons Company, Providence, R. I.

Class 60—Fuel Oil Pumps. Kraissl Company, Inc., Hackensack, N. J.

Classic—Heating & Ventilating Registers. Auer Register Co., Cleveland, O.

Clean-Aire—A. C. Furnaces—Harvey-Whipple, Inc., Springfield, Mass.

Clean Air—Register Shields. Swing-a-Way Steel Products, Inc., Chicago.

Cleanaire—Blower-Filters. Peerless Foundry Co., Indianapolis, Ind.

Cleveland—Furnaces. Dornback Furnace & Fdy. Co., Cleveland.

Climate-Changer—Air Conditioning Units. Trane Co., La Crosse, Wis.

Climate Master—Oil Burning Air Conditioning Furnace. Hess Warming & Ventilating Co., Chicago, Ill.

Climator—Blower-Filter Units. L. J. Mueller Furnace Co., Milwaukee.

Clincher—Conductor Fittings and Accessories. Milcor Steel Co., Milwaukee.

Clinton—Grilles. Wickwire Spencer Steel Co., New York City.

Clipper—Stokers. Conco Corp., Mendota, Ill.

Cog-Belts—V-type Belts, Dayton Rubber Mfg. Co., Dayton, Ohio.

Colalloy—Light Weight Shapes, Plates. Colonial Alloys Co., Philadelphia.

Coldstream—Air Conditioning Units. Baker Ice Machine Company, Inc., Omaha, Nebr.

Collopakes—Roofing Paint. Samuel Cabot, Inc., Boston.

Colonial—Blower-Filters, Oil Burners, Furnaces, Humidifiers, Heaters, Stokers. Green Colonial Furnace Co., Des Moines, Ia.

Colonial—Conductor Heads and Fittings. Royal-Apex Mfg. Corp., Brooklyn.

Colonial—Gravity Registers. Auer Register Co., Cleveland, O.

Colortipt—Arc Welding Electrodes. Wilson Welder & Metals Co., Inc., New York City.

Columbus—Humidifiers. Fred D. Pfening Co., Columbus, Ohio.

Columbus—Ventilators. F. O. Schoedinger, Columbus, O.

Combustioneer—Stokers. Steel Products Engineering Co., Springfield, O.

Comet Exhaustair—Fans and Ventilators. New York Blower Co., Chicago, Ill.

Comfort—Furnaces. J. B. Foote Foundry Co., Fredericktown, O.

Comfort—Furnaces. May-Fiebeger Company, Newark, Ohio.

Comfort Air—Humidifiers. Comfort Products Corporation, Harvey, Ill.

Comfortaire—Stokers. Hamilton Automatic Stoker Corp., Hamilton, O.

Comfortmaker—Furnaces. Joliet Heating Corp., Joliet, Ill.

Comfortrol—Blowers and Blower Units, Furnaces. Waterman-Waterbury Co., Minneapolis.

Comfortrol—Effective Temperature Control. Julien P. Friez & Sons, Towson, Md.

Comfortzone—Furnaces. Michigan Tank & Furnace Corp., Detroit.

Co-Min-Co—Insulating Cement. United States Mineral Wool Co., Chicago.

Compact—Blowers. Bishop & Babcock Mfg. Co., Cleveland, O.

Compact—Oil Burners. The Aldrich Co., Wyoming, Ill.

Compactaire—Air Conditioning Furnaces. Glasby Mfg. Co., Inc., J. P., Bloomfield, N. J.

Condor—Belts. Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., Passaic, N. J.

Coni-Vane—Ventilators. Allen Corp., Detroit.

Conservoil—Oil Burners. Crane Company, Chicago.

Control-O-Gas—Valves. Payne Furnace & Supply Co., Beverly Hills, Cal.

Controlaire—Furnaces. St. Louis Furnace Mfg. Co., St. Louis.

Convector—Furnaces. L. J. Mueller Furnace Co., Milwaukee, Wis.

Convector—Humidifiers. Maid-O'-Mist, Inc., Chicago.

Convert—Gas Burners. Columbia Burner Company, Toledo, Ohio.

Convert-O-Grate—Fuel Conversion Grates. Anchor Post Fence Co., Heating Div., Baltimore.

Coolair—Blowers, Fans and Ventilators. American Coolair Corp., Jacksonville, Fla.

Coolite—Heat Absorbing Glass. Mississippi Glass Company, New York City.

Coolvent—Attic Fans. Autovent Fan & Blower Div., Herman Nelson Corp., Chicago.

Copperkote—Waterproofing. Cheney Metal Products Company, Trenton, N. J.

Copperior—Sheets. Superior Sheet Steel Co., Canton, O.

Copperskin—Waterproof sheathing paper. Angier Corp., Framingham, Mass.

Cop-R-Loy—Copper Bearing Steel Sheets. Wheeling Corrugating Co., and Wheeling Steel Corp., Wheeling, W. Va.

Copruf—Roofing. Copper Roofs Corporation, Milwaukee.

Copruf Valley—Flashings. Copper Roofs Corporation, Milwaukee.

Corinco—Insulation. Cork Insulation Co., Inc., New York, N. Y.

Corkboard—Insulation. Armstrong Cork Co., Lancaster, Pa.

Corona—Dust Separator and Collector. Clark Dust Control Company, Chicago.

Counterflow—Air Conditioning Furnaces. Western Blower Co., Seattle.

Crane Basmor—Bastian-Morley Co., Inc., LaPorte, Ind.

Crescent—Furnaces. Green Colonial Furnace Co., Des Moines, Ia.

Crescent—Oil Burners. Caloroil Burner Corp., Hartford, Conn.

Crescent—Furnaces. Crane Company, Chicago.

Crestoloy—Tools. Cresecent Tool Co., Jamestown, N. Y.

Crescent—Skylights, Ventilators. American Sheet Metal Works, New Orleans, La.

Crucibleweld—Arc Welding Electrodes. Westinghouse Electric & Mfg. Co., East Pittsburgh.

Crusader—Oil Burners. Bethlehem Fdry. & Mach. Co., Bethlehem, Pa.

Crystal—Crackle Finish Paint. Hilo Varnish Corp., Brooklyn.

Custom-Aire—Furnaces and Heaters. Heating Equipment Co., San Francisco.

D

D&E—Vacuum Furnace Cleaners, Stokers. Dickson Coal Co., New York City.

DL—Controls, Filters, Relays, Switches, Thermostats, Transformers and Solenoid Valves. Detroit Lubricator Co., Detroit.

D-Q—Furnace Vacuum Cleaners. Densmore-Quinlan Co., Kenosha, Wis.

Dailaire—Blower-Filters, Furnaces, Heaters, Humidifiers. McLouth Air Conditioning Corp., Lansing, Mich.

Dakota—Oil Burners. Fargo Foundry Co., Fargo, N. D.

Da-Nite—Acratherm. Minneapolis-Honeywell Reg. Co., Minneapolis.

Daptoblu—Gas Burners. Beck Engineering Combustion Kompany, St. Louis.

Dayton—Window Ventilators. W. W. Grainger, Inc., Chicago.

Deco—Metal Shingles. Cincinnati Sheet Metal & Roofing Co., Cincinnati.

Defender—Oil Burners. Silent Glow Oil Burner Corp., Hartford, Conn.

Deflecto—Ventilators. The Day Co., Minneapolis, Minn.

Deflectrol—Duct Turning Vanes. Barber-Colman Co., Rockford, Ill.

Degraco—Enamels, Lacquers and Paints. Detroit Graphite Co., Detroit.

Dehydrantine—Waterproofing. A. C. Horn Co., Long Island City.

Delco-Heat—Oil Burners, Furnaces, Motors, Pumps and Stokers. Delco Appliance Div., General Motors Corp., Rochester, N. Y.

DeLuxe—Air Conditioning Furnaces. Williamson Heater Co., Cincinnati.

DeLuxe—Gravity Furnaces. Dowagiac Steel Furnace Co., Dowagiac, Mich.

DeLuxe—Heaters. Agricola Furnace Co., Inc., Gadsden, Ala.

Dens-Pac—Asbestos Cement. Norristown Magnesia & Asbestos Co., Norristown, Pa.

Deoxidine—Metal Protecting Paint. American Chemical Paint Co., Ambler, Pa.

Dependable—Paint. Heath & Milligan Mfg. Co., Chicago, Ill.

Dereks—Paint. Debevoise Co., Brooklyn, N. Y.

De-Sta-Co—Blower Housings and Stampings. Detroit Stamping Co., Detroit.

Detroit LoStoker—Stokers. Detroit Stoker Co., Detroit and Monroe, Mich.

Detroit RotoStoker—Overfeed Spreader Stoker. Detroit Stoker Co., Detroit.

Detroit UniStoker—Stokers. Detroit Stoker Co., Detroit and Monroe, Mich.

Dew-Aire—Air Conditioning Units. Standard Computing Scale Co., Detroit.

Dexter Heat Valve—Ridge Ventilators Swartwout Co., Cleveland.

Dial-Set—Stokers. Kol-Master Corp., Oregon, Ill.

Diamond—Compounds, Enamels, Lacquers and Paint. Thompson & Co., Pittsburgh, Pa.

Diamond—Smoke Pipe Dampers. Adams Company, The, Dubuque, Ia.

Diamond H—Controls, Relays, Switches. Hart Mfg. Co., Hartford, Conn.

Dickinson—Ventilators. Aeolus Dickinson, Chicago, Ill.

Dickrope—V-type Belts. R. & J. Dick Co., Passaic, N. J.

Directaire—Air Conditioning Furnances. Fitzgibbons Boiler Co., Inc., New York City.

Directherm—Furnaces. Airtherm Mfg. Co., St. Louis.

Dixigas—Gas Welding Rod. Atlantic Steel Co., Atlanta, Ga.

DixiPeer—Electrodes. Atlantic Steel Co., Atlanta, Ga.

Dixisteel—Angles, Bars, Channels, Rivets, Wire. Atlantic Steel Co., Atlanta, Ga.

Do-All—Combination Hammer and Drill. Wodack Electric Tool Corp., Chicago.

Doall—Buffers, Grinders, Polishers & Sanders. Continental Machines Incorporated, Minneapolis.

Doall Metalmaster—Contour cutting saw. Continental Machines Incorporated, Minneapolis.

Dorex—Odor Adsorbers. Dorex Air Conditioning Div., W. B. Connor Eng. Corp., New York City.

Dorwil—Utility Room Furnaces. Gibraltar Engineering Co., Los Angeles.

Double Diamond—Humidistats, Psychrometers, Relays, Switches, Thermometers. H-B Instrument Company, Philadelphia, Pa.

Double-Duty—Oil Burners. Aldrich Co., Wyoming, Ill.

Double-Lock—Roofing. Copper Roofs Corporation, Milwaukee.

Double-Seal—Humidifier Fittings. Hays Mfg. Co., Erie, Pa.

Dover-Imperial—Eaves Trough Hangers. Ohio Wire Products Co., Dover, O.

DovRloy—Sheets. Reeves Steel & Mfg. Co., Dover, Ohio.

Draftmaster—Draft Regulators. Campbell Engineering Co.,. Appleton, Wis.

Draftmaster—Regulators. Platt Products Corp., Lansing, Mich.

Draftender—Motors and Regulators. Penn Electric Switch Co., Goshen, Ind.

Draft-O-Stat—Draft Regulators and Smoke Pipe Dampers. Hotstream Heater Company, Cleveland.

Draftrite—Draft Gages. Bacharach Industrial Instrument Co., Pittsburgh.

Dreadnaught—Soldering Torches and Furnaces. P. Wall Mfg. Supply Co., N. S. Pittsburgh.

Drifilter—Filters. American Air Filter Co., Inc., Louisville, Ky.

Dri-Lap—Roofing. Globe Iron Roofing & Corrugating Co., Newport, Ky.

Dri-N-Tite—Cement. A. C. Horn Co., Long Island City, N. Y.

Driwal—Waterproofing Compound. The Glidden Co., Cleveland.

Dual-Clone—Blow Pipe Collectors. Day Co., Minneapolis.

Dubblseal—Sheathing. Masonite Corp., Chicago.

Duckseal—Waterproofing Compound. Acorn Refining Co., Cleveland.

Duco—Enamels and Lacquers. E. I. du Pont de Nemours & Co., Wilmington, Del.

Ducon—Controls, Soldering Coppers. Dual Remote Control Co., Wayne, Mich.

Duct Soundliner—Duct Insulation. Baldwin-Hill Company, Trenton, N. J.

Ducturns—Vanes. Tuttle & Bailey, Inc., New Britain, Conn.

Ductype—Blowers. South Bend Air Products, Inc., South Bend, Ind.

Dukrome—Metal Protecting Paint. du-Pont de Nemours & Co., Wilmington, Del.

Dulux—Enamels, Lacquers and Paints. E. I. du Pont de Nemours & Co., Wilmington, Del.

Dunco—Relays, Switches, Thermostats. Struthers Dunn, Inc., Philadelphia.

Duplex—Flashings. Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

Duplex—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Dura—Furnaces, Heaters. Barry Furnace Co., Hamilton, O.

Dur-A-Ble—Furnaces. St. Louis Furnace Mfg. Co., St. Louis.

DuraBilt—Gravtly Registers. Auer Register Co., Cleveland, Ohio.

Dura-Flex—Directional Flow Registers. Auer Register Co., Cleveland.

Dura-Line—Heating & Ventilating Registers. Auer Register Co., Cleveland.

Durastic—Chimney Liners. Skuttle Mfg. Co., Detroit.

Dura-Steel—Registers. Middleton Mfg. & Sales Co., Minneapolis.

Duratite—Glazing Compounds. Tropical Paint & Oil Co., Cleveland.

Durex—Bearings. General Motors Corp., Moraine Products Div., Dayton, Ohio.

Duro-Gloss—Stainless Sheets. Jessop Steel Co., Washington, Pa.

Duronze—Sheets. Bridgeport Brass Co., Bridgeport, Conn.

Duroplastic—Caulking & Glazing Compounds. Acorn Refining Co., Cleveland.

DustStop — Filters. Owens-Corning Fiberglas Corp., Toledo, Ohio.

Dux-Sulation—Duct Insulation. Grant Wilson, Inc., Chicago, Ill.

Dynaflow—Blowers. South Bend Air Products, Inc., South Bend, Ind.

E

E-Z Arc—Arc Welders. Will-Weld Mfg. Co., Omaha, Nebr.

Eagle Deluxe—Motors. Small Motors, Inc., Chicago.

Eagle Star—Solder. Eagle-Picher Lead Co., Cincinnati, Ohio.

Eagle Super—Insulating Cement and Flashing. Eagle-Picher Lead Co., Cincinnati, O.

Eagle Tin-Loy — Tinning Compounds. Eagle-Picher Lead Co., Cincinnati, Ohio.

Earle—Ventilators. Berger Bros. Co., Philadelphia, Pa.

East Wind—Window Fans. American Metal Products Co., Fort Worth, Tex.

Easy—Buffers, Grinders, Polishers and Sanders. Detroit Surfacing Machine Co., Detroit.

Easy Bead—Eaves Trough and Gutters. St. Paul Corrugating Co., St. Paul.

Easy-Flo—Solder. Handy & Harman, New York City.

Easy-Slip — Conductor Pipe. Eaves Trough and Gutters. La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.

Echo—Ceiling Ventilators. Elgo Shutter & Mfg. Co., Detroit.

Economizer—Nozzles. Bahnson, Winston-Salem, N. C.

Economy—Power Hack Saws, F. L. Robertson, Buffalo.

Economy—Furnaces, Heaters. International Heater Co., Utica, N. Y.

Economy—Adjustable Buffing Hoods. Kirk & Blum Mfg. Co., Cincinnati, O.

Economy—Gravity Registers. Auer Register Co.,. Cleveland, O.

Economy—Ventilators. Arex Company, Chicago.

Econo-Therm—Registers. Middleton Mfg. & Sales Co., Minneapolis.

Edge Seal—Filters. Wilson & Co., Inc., Chicago.

Edgers—Hand Flanging Machines. Packham Crimper Co., Mechanicsburg, Ohio.

Effco—Louvres, Skylights, Ventilators. W. F. Hirschman Co., Inc., Buffalo.

80 PWA—Utility Room Furnace. Fitzgibbons Boiler Co., Inc., New York City.

Elasticon—Roofing Paint. A. C. Horn Co., Long Island City.

Elastikote—Paint. Tropical Paint & Oil Co., Cleveland, O.

El Dryol — Waterproofing Compound. Gerard Chemical Co., Elizabeth, N. J.

Electric City—Gutter Forming Machines. F. L. Robertson, Buffalo.

Electric Filter Watchman—Air Filter Gauge. Herbusch Corp., St. Louis.

Electric Furnace—Fire Brick. Chicago Fire Brick Co., Chicago.

Electric Furnace Man—Domestic Stoker. General Machine Co., Inc., Emmaus, Pa.

Electric Janitor—Controls and Regulators. Minneapolis-Honeywell Regutor Co., Minneapolis, Minn.

Electrolaire—Air Conditioning Furnaces. Electrol Incorporated, Clifton, N. J.

Electroplaque—Air Diffusers. Air & Refrigeration Corp., New York City.

Electro-Matic—Filters. American Air Filter Co., Inc., Louisville, Ky.

Electropump—Water Circulating Pump. Weil Pump Company, Chicago.

Electro-Sheet—Roofing. American Brass Co., Waterbury, Conn.

Electro Way—Fans. Ward Mfg. Co., Plymouth, Mich.

Electro-Wind—Ventilators. Allen Corp., Detroit.

Elgin—Brazing Torches and Welders. Borm Mfg. Co., Elgin, Ill.

Elgin—Louvers and Shutters. Elgo Shutter & Mfg. Co., Detroit.

El Glykol — Waterproofing Cmpound. Gerard Chemical Co., Elizabeth, N. J.

Elite—Gravity Registers. Auer Register Co., Cleveland, O.

Elturn—Duct Turning Vanes. Barber-Colman Co., Rockford, Ill.

Emerson, Jr.—Emerson Electric Mfg. Co., St. Louis.

Empire—Mallets. Greene, Tweed & Co., Bronx, N. Y.

Enamel-Kote — Enamels. Acme White Lead & Color Works, Detroit.

Endurance—Cement and Paint. Glidden Company, Cleveland.

Enduro—Sheets. Republic Steel Corp., Cleveland, O.

Epco—Perforated Metals. Erdle Perforating Co., Rochester, N. Y.

Equator—Furnaces and Heaters. Lennox Furnace Co., Marshalltown, Iowa.

Era—Furnaces. Excelsion Steel Furnace Co., Chicago.

Era Exl-Air—Furnaces. Excelsior Steel Furnace Co., Chicago.

Erco — Flanging and Shrinking Machines, Power Punches. Engineering and Research Corporation, Riverdale, Md.

Esco—Smoke Pipe Dampers. Eselgroth & Co., Newark, N. J.

Esico—Electric Soldering Coppers. Electric Soldering Iron Co., Inc., Deep River, Conn.

Essco—Solder and Roofer Tools. Eastern States Supply Co., Brooklyn.

Esso—Furnaces. Gilbert & Barker Mfg. Co., Springfield, Mass.

Eternium—Paint. Barrett Div., Allied Chemical & Die Corp. New York City.

Eureka—Furnaces. Home Stove Co., Indianapolis, Ind.

Evanair—Oil Furnaces and Gas Heaters, Evanoil Div., Evans Products Co., Detroit.

Evansway—Furnaces. George Evans Corp., Moline, Ill.

Evco—Valves. Electric Valve Mfg. Co., New York, N. Y.

Everdur — Plates, Sheets, Electrodes, Welding Rod, American Brass Co., Waterbury, Conn.

Everjet—Roofing Paint. Barrett Div., Allied Chemical & Die Corp., New York City.

Everlast—Furnaces. Pacific Airmax Corporation, Huntington Park, Cal.

Everwear — Metal Ceilings, Eaves Trough and Gutters with Fittings, Conductor Pipe, Ridge Rolls and Ridging, Roofing, Metal Shingles and Tile, Ventilators. Southern States Iron Roofing Co., Savannah, Ga.

Excelsior—Elbow Knife. C. DeWitt Wagner, Cedar Rapids, Iowa.

Ex-L-ite—Sheets. Republic Steel Corporation, Cleveland.

Externit—Duct Board. Ruberoid Co., New York City.

E-Z-On—Damper Clips and Tips, and Damper Regulators. M. A. Gerett Co., Milwaukee.

F

F & D—Refractories. General Insulating Products Co., Brooklyn.

F & E—Underfeed Stokers. Flynn & Emrich Co., Baltimore, Md.

Fabrikated—Grilles, Registers. Independent Register Co., Cleveland, O.

Faceweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Falco—Sheets. Fairmont Aluminum Co., Fairmont, W. Va.

Famous—Furnaces. Excelsior Steel Furnace Co., Chicago.

Famous Exl-Air—Air Conditioning Furnace. Excelsior Steel Furnace Co., Chicago.

Far Quar—Furnaces. Farquhar Furnace Co., Wilmington, O.

Fastemp—Furnaces. Norge Heating & Cond. Div., Detroit.

Featherfin—Coils. L. J. Wing Mfg. Co., New York, N. Y.

Featherweight—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Federal—Refractories. U. S. Stoneware Co., Akron, Ohio.

F Electric—Fan Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Fenestra—Heat Insulating Windows. Detroit Steel Products Co., Detroit.

Fenn's Rotary—Roof Ventilators. Waverly Heating Supply Co., Boston.

Ferrobord — Steel Roofing. Truscon Steel Co., Youngstown, Ohio.

Ferroclad—Building Insulation. Truscon Steel Co., Youngstown, O.

Ferrocraft—Grilles. Tuttle & Bailey, Inc., New Britain, Conn.

Ferro-Therm — Insulation. American Flange & Mfg. Co., Inc., New York.

Ferroweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Fiberglas — Insulation. Owens-Corning Fiberglas Corp., Toledo, Ohio.

Fibrekote—Roof Cement. National Manufacturing Corp., Tonawanda, N. Y.

Filteraire — Window Ventilator - filter units. Davies Air Filter Corp., New York City.

Filtered Aire—Blower-Filters. American Foundry & Furnace Co., Bloomington, Ill.

Filter-Shield—Register Shields. Swing-a-Way Steel Products Inc., Chicago.

Findlay—Stokers. Bluffton Mfg. Co., Findlay, O.

Fine Air—Air Conditioning Units. Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit, Mich.

Fin-Flex—Directional Flow Registers. The Auer Register Co., Cleveland.

Fin-Line—Directional Flow Registers. The Auer Register Co., Cleveland.

Firebox—Combustion Chambers. Sid Harvey, Inc., Valley Stream, N. Y.

Firecrete—Refractories. Johns-Manville, New York, N. Y.

Firedaire — Circulating Heaters. Edwards Mfg. Co., Inc., Cincinnati.

Fire-Fixer—Firing Tools. Farrell-Cheek Steel Co., Sandusky, Ohio.

Fire-Hearth — Refractories. Fireline Stove & Furnace Lining Co., Chicago.

Firelte—Cement. Johns-Manville, New York, N. Y.

Fire-King — Stokers. Sinker-Davis Co., Indianapolis, Ind.

Fire Pilot — Stoker Control. Sampsel Time Control, Inc., Spring Valley, Ill.

Fire Tender—Stokers. Holcomb & Hoke Mfg. Co., Indianapolis, Ind.

Firezist—Moldable Plastic Refractory. Laclede-Christy Clay Products Co., St. Louis.

Firma—Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Fitrite—Conductor, Eaves Trough and Gutter Fittings and Accessories, Skylight Lifts, Snow Guards, Ventilators. David Levow, or Rival Strap Corp., New York City.

Fitzgibbonsaire—Air Conditioning Unit. Fitzgibbons Boiler Co., New York City.

Fixit—Cement. National Mfg. Corp., Tonawanda, N. Y.

Flash-Off No. 99—Industrial Finish. Acme White Lead & Color Works, Detroit.

Flash-Rite—Flashings. The Figge Mfg. Co., Chicago, Ill.

Flatjet—Spray Nozzles. Spraying Systems Co., Chicago.

Flat-Top—Roofing. Globe Iron Roofing & Corrugating Co., Newport, Ky.

Fleetweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Fleur de Lis—Conductor Heads and Fittings. Royal-Apex Mfg. Corp., Brooklyn, N. Y.

Flexair—Registers and Grilles. Tuttle & Bailey, Inc., New Britain, Conn.

Flexarc—Arc Welders. Westinghouse Electric & Mfg. Co., East Pittsburgh.

Flex-Bar—Registers. United States Register Co., Battle Creek, Mich.

"Flexiblac"—Paint. Samuel Cabot, Inc., Boston.

Flo-Co—Furnaces. Floral City Co., Monroe, Mich.

Floezy—Solder. Merchant & Evans Co., Philadelphia, Pa.

Flor-Aire—Floor Furnaces. L. J. Mueller Furnace Co., Milwaukee.

Flosol—Flux. American Chemical Paint Co., Ambler, Pa.

Flotrol—Valves. Monmouth Products Co., Cleveland.

Flo-Warm—Coal, Oil, Gas and Stoker-Fired Furnaces. Williamson Heater Co., Cincinnati, Ohio.

Flualyzer—Portable CO_2 Analyzer. Chas. Engelhard, Inc., Newark, N. J.

Fluemaster—Chimney Furnace. Round Oak Co., Dowagiac, Mich.

Fluid Heat—Oil Burners, Furnaces, Water Heaters. Anchor Post Fence Co., Baltimore.

Follansbee—Furnace Pipe. Sheet Metal Specialty Co., Pittsburgh.

Forbes Syphonaire—Ventilators. Western Engineering & Mfg. Co., Los Angeles.

Forbes Tri-Peller—Fans. Western Engineering & Mfg. Co., Los Angeles.

Ford-V-Wear—Building Insulation. Ford Roofing Products Co., Chicago.

Forest Fleece—Insulation. John J. Doheny Co., Belmont, Mass.

Formdux—Duct System. Airtemp Div., Chrysler Corp., Dayton, Ohio.

Forstair Gas—Circulating Heaters. Pernot & Rich, Inc., Los Angeles.

Fosco—Skylights. F. O. Schoedinger, Columbus, O.

Foundation Coating — Waterproofing. Glidden Co., Cleveland.

Practo - Crete — Castable Refractory. Ramtite Co., Chicago.

Franzite—Enamels and Lacquers. Hilo Varnish Corp., Brooklyn, N. Y.

Free-Aire—Circulating Heaters. Kehm Corporation, Chicago.

Freeman—Stokers. Illinois Iron & Bolt Co., Chicago, Ill.

Freeport—Oil Burners. Holtum Mfg. Co., Freeport, Ill.

Friction Fighter—Bearings. Link Belt Co., Chicago.

Frigid—Night Air Cooling and Exhaust Fans and Fan Blades. Circulators & Devices Mfg. Corp., New York City.

Front End—Paint. Barrett Div., Allied Chemical & Die Corp., New York, N. Y.

Fros-T-aire — Air Conditioning Units. Palmers Manufacturing Corp., Phoenix, Ariz.

Frost-O-Lite—Paint. Sanvin Chemical Products Co., Moline, Ill.

Fuel-Saver—Automatic Draft Regulator. Walker Mfg. & Sales Corp., St. Joseph, Mo.

Fulljet—Spray Nozzles. Spraying Systems Co., Chicago.

Fulscope—Controls. Taylor Instrument Companies, Rochester, N. Y.

Fulton—Copper Paint. Debevoise Co., Brooklyn, N. Y.

Fyre-Chek—Draft Regulators. Wisconsin Heating & Draft Control Co., Appleton, Wis.

Fyre-Mortar—Insulating Cement. Quigley Company, Inc., New York City.

Fyr-feeder—Stokers. American Coal Burner Company, Chicago, Ill.

Fyrgard—Doors. Richmond Fireproof Door Co., Richmond, Ind.

Fyrite—CO_2 Analizers. Bacharach Industrial Instrument Co., Pittsburgh.

Fyr-Fly—Oil Burners. The Aldrich Co., Wyoming, Ill.

G

G. B. C.—Blowers and Fans. General Blower Co., Philadelphia.

G/C—Controls. General Controls Co., Glendale, Cal.

G-E—Air Conditioning Units, Oil Burners, Compressors, Controls, Soldering Coppers, Couplings, Electrodes, Fans, Flux, Furnaces, Humidistats, Motors, Relays, Switches, Transformers, Solenoid Valves, Thermostats, Welders. General Electric Co., Bloomfield, N. J., and Schenectady, N. Y.

G-M—Grilles, Louvres, Shutters, Perforated Metals, Registers, Register Shields, Metal Stampings, Ventilators. Gillian Mfg. Co., Detroit.

G. R.—Air Conditioning Units, Window Ventilators and Filter Units. General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.

Galvanide—Metal Protecting Paint. A. C. Horn Co., Long Island City.

Galvaprep—Rust Preventive Chemicals. Neilson Chemical Co., Detroit.

Gantz—Furnace Lighter for Coal and Coke. American Furnace Lighter Sales Co., St. Louis.

Garland—Furnaces, Heaters. Detroit-Michigan Stove Co., Detroit.

Gas-Era—Furnaces. L. J. Mueller Furnace Co., Milwaukee, Wis.

Gas King—Furnaces. J. King Kent Co., St. Louis.

Gas Mizer—Furnaces. Floral City Co., Monroe, Mich.

Gastite — Air Conditioners, Furnaces. Waterman-Waterbury Co., Minneapolis, Minn.

Gas-Vac—Furnaces and Heaters. Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y.

Gem—Furnaces. Robinson Furnace Co., Chicago, Ill.

Gem—Soldering Furnaces. Burgess Soldering Furnace Co., Columbus, O.

Gemaco—Compressors. General Machinery Co., Spokane, Wash.

Gen-Arc—Arc Welders. General Equipment Co., Wichita, Kan.

Genasco—Cement, Compounds, Paint. Barber Asphalt Corp., Barber, N. J.

General—Heaters, Agricola Furnace Co., Inc., Gadsden, Ala.

GeneralAire—Fans. General Aire Company, Philadelphia.

Generator—Coils. Hotstream Heater Co., Cleveland, O.

Giant—Oil Burners. Aldrich Co., Wyoming, Ill.

Gibraltar—Furnace and Heaters. P. H. MaGirl Foundry & Furnace Works, Bloomington, Ill.

Gilbarco—Blower-Filter Units, Furnaces, Oil Burners and Draft Regulators. Gilbert & Barker Mfg. Co., Springfield, Mass.

Gilco—Furnaces and Water Heaters. J. L. Gillen Co., Dowagiac, Mich.

Gilt Edge—Furnaces. Schwab Furnace Co., Milwaukee, Wis.

Glazola — Glazing Compounds. Nebel Mfg. Co., Cleveland.

Globe—Sheets. Newport Rolling Mill Co., Newport, Ky.

Globe—Ventilators. J. M. & L. A. Osborn Co., Cleveland.

Globe Sizzler—Hot Water Coils. Globe Machinery & Supply Co., Des Moines, Ia.

Glo-Fyr—Oil Burners. Aldrich Co., Wyoming, Ill.

Glowan—Gas Burners, J. O. & C. U. Martin, San Francisco.

Gnome—Oil Burners. Aldrich Co., Wyoming, Ill.

Gohi—Eaves Trough & Gutters, Pipe, Ridge Rolls and Ridging, Roofing. Globe Iron Roofing & Corrugating Co., Newport, Ky.

Gohi—Sheets. Newport Rolling Mill Co., Newport, Ky.

Golden Rod — Air Conditioning Units, Fans and Wheels, Blowers. F. Jaden Mfg. Co., Inc., Hastings, Nebr.

Gordon—Gas Conversion Burners. Roberts-Gordon Appliance Corp., Buffalo.

Gradutrol — Controls. Minneapolis-Honeywell Regulator Co., Minneapolis.

Grand Rapids—Vacuum Furnace Cleaner. Doyle Vacuum Cleaner Co., Grand Rapids, Mich.

Granodine—Metal Protecting Paint. American Chemical Paint Co., Ambler, Pa.

Graylite—Building and Duct Insulation, Insulite Div. Minnesota and Ontario Paper Co., Minneapolis.

Greastop—Filters. Air-Maze Corporation, Cleveland.

Grid—Heating and Cooling Coils. D. J. Murray Mfg. Co., Wausau, Wis.

Grillometer—Direct Reading Air Velocity Meter. Detroit Air Conditioning Service Co., Inc., Detroit.

Gross-Aire — Furnaces and Stokers. Grossenbacher Furnace Co., St. Louis.

Gurney — Furnaces. East Anaheim Sheet Metal Works, Long Beach, Cal.

Guthfan—Ventilating Fans. Edwin F. Guth Company, St. Louis.

H

H-B—Gas Conversion Burner. Handley Brown Heater Co., Jackson, Mich.

H&C—Registers. Hart & Cooley Mfg. Co., Holland, Mich.

H & K—Perforated Metals. Harrington & King Perforating Co., Chicago.

HairBestos—Insulation. Wilson & Co., Inc., Chicago, Ill.

Haircraft—Insulation. Wilson & Co., Inc., Chicago, Ill.

Hall Cooler—A. C. Units. Hall Manufacturing Co., Cedar Rapids, Ia.

Hammerkraft—Enamels and Lacquers. Hilo Varnish Corp., Brooklyn.

Hammer-Sets—Expansion Bolts. Rawlplug Co., Inc., New York City.

Handnib—Punches. National Machine Tool Co., Racine, Wis.

Handy—Pipe, Prefabricated Ducts and Fittings. F. Meyer & Bro. Co., Peoria, Ill.

Handy-Andy—Clinker Tong. Northwestern Stove Repair Co., Chicago, Ill.

Handy Change—Arc Welders. Maple Valley Mfg. Co., Mapleton, Iowa.

Handy-Flux—Soldering Flux. Handy & Harman, New York City.

Happy Thought — Heaters. Pittston Stove Co., Pittston, Pa.

Hardweld — Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Health-Air—Window Ventilator-Filters. Reliable Sheet Metal Engineering Co., Chicago.

Health-aire—Blower, Coils, Fans, Louvers and Shutters and Ventilators. Jahnson Fan & Blower Corp., Chicago, Ill.

Hearth—Refractories. Refractory & Insulation Corporation, New York City.

Heat-Aid—Furnace Linings. Pyrolite Products Co., Cleveland, Ohio.

Heat Booster—Warm Air Booster Fans. Victor Electric Products, Inc., Cincinnati.

Heat Breaker—Fans. Warren Earl Company, Houston, Tex.

Heat Check—Insulating Cement. Refractory & Insulation Corp., New York City.

Heat Holder—Baffles. Sid Harvey, Inc., Valley Stream, N. Y.

Heatmaker—Circulating Heater. Iron Fireman Mfg. Co., Cleveland.

Heat-Pak—Oil Burners. Aldrich Co., Wyoming, Ill.

Heat Proof—Paint. Glidden Co., Cleveland.

Heat-Rite—Gravity Registers. Auer Register Co., Cleveland.

Heatwave—Furnaces. Stephens Mfg. Co., Tulsa, Okla.

Heatrola—Heaters. Estate Stove Co., Hamilton, O.

Heatseal—Insulation. Ehret Magnesia Mfg. Co., Valley Forge, Pa.

Heavyduty—Damper Quadrants. Parker-Kalon Corp., New York City.

Heet-Master—Kettles. Aeroil Burner Co., Inc., West New York, N. J.

Hellite — Refractories. Johns-Manville, New York, N. Y.

Helyx—Drive Screws. Hillwood Manufacturing Co., Cleveland.

Hemetic — Furnaces. Favorite Stove Co. Piqua, Ohio.

Hercules—Fan Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Hercules—Furnaces. Johnston Gas Furnace Corp., North Hollywood, Cal.

Hercules—Gravity Roof Ventilators. Berger Bros. Co., Philadelphia.

Heresite—Pipe and Fittings. Heremetal Co., Minneapolis.

Hero—Heaters. J. V. Patten Co., Sycamore, Ill.

Hev-R-Oil—Oil Burners. Sanmyer Corp., Chicago.

Hexagonal Mesh—Wire Glass. Mississippi Glass Co., New York City.

Hi-Boy—Furnaces. Aladdin Heating Corp., Oakland, Cal.

HiBoy—Furnaces. Dowagiac Steel Furnace Co., Dowagiac, Mich.

Hicycle—Electric Tools. Chicago Pneumatic Tool Co., New York City.

Highflex—Belts. B. F. Goodrich Co., Akron, O.

Highway—Copper Iron. Apollo Steel Co., Apollo, Pa.

Hi-Gloss—Stainless Sheets. Jessop Steel Co., Washington, Pa.

Hi Heat—Enamels and Lacquers, Aluminum Paint. J. H. Krehbiel Co. Chicago.

Hi-Lo—Variable Speed Pulleys. Equipment Engineering Co., Minneapolis.

Hilo Spatter—Enamels and Lacquers. Hilo Varnish Corp., Brooklyn.

Hilume—Aluminum Paint. Hilo Varnish Corp., Brooklyn.

Hinman—Angle Benders. L. R. Evans Machine Co., Sandwich, Ill.

Hi-Speed—Nibbler and Shears. Libert Machine Co., Green Bay, Wis.

Hi-Temp—Insulating Cement. B. F. Nelson Mfg. Co., Minneapolis.

Hitoncast—Grilles. Tuttle & Bailey, Inc., New Britain, Conn.

Hoffman—Oil Burners. Shedlov Oil Burners, Inc., Minneapolis, Minn.

Hold Heat—Soldering Coppers. Turner Brass Works, Sycamore, Ill.

Hold-Heet—Controls, Thermostats, Transformers. Russell Electric Co., Chicago, Ill.

Holgun—Portable Electric Drills. Black & Decker Mfg. Co., Towson, Md.

Holtite — Screws. Continental Screw Co., New Bedford, Mass.

Home—Furnaces. Rock Island Stove Co., Rock Island, Ill.

Home Comfort—Blowers, Furnaces. St. Louis Furnace Mfg. Co., St. Louis.

Horneblende—Metal Protecting Paint. North American Fibre Products Co., Cleveland.

Hot Blast—Soldering Furnaces and Torches. Turner Brass Works, Sycamore, Ill.

Hotoo—Furnaces, Oil Burners. Hotentot Co., Inc., Omaha, Nebr.

Hot Spot—Electric Welders. Acme Electric Welder Co., Los Angeles.

Hot Wave—Coils. Rudy Furnace Co., Dowagiac, Mich.

Howle—Heat Savers. Condensation Engineering Corp., Chicago, Ill.

Hoyt—Lead Roofing. National Lead Co., New York, N. Y.

Huber—Overfeed Stokers. Flynn & Emrich Co., Baltimore, Md.

Humidair—Humidifiers. Skilbeck Mfg. Co., Kenosha, Wis.

Humidair—Washers. American Foundry & Furnace Co., Bloomington, Ill.

Humidigrad—Valves. Monmouth Products Co., Cleveland.

Humidigraph — Hygrometers. Bristol Company, Waterbury, Conn.

Humidiguide—Hygrometer. Taylor Instrument Companies, Rochester, N. Y.

Humidostat — Humidistats. Johnson Service Co., Milwaukee, Wis.

Humiduct—Humidifiers. Bahnson Co., Winston-Salem, N. C.

Humitherm—Air Conditioning Units. Grinnell Co., Inc., Providence, R. I.

Humphrey—Furnaces. General Gas Light Co., Kalamazoo, Mich.

Hydra—Valves. Albright Equipment Co., Johnstown, Pa.

Hydraulic-Action — Controls. White-Rodgers Electric Co., St. Louis.

Hydrocide—Compounds, Paint, Waterproofing. L. Sonneborn Sons, Inc., New York City.

Hydro - Clone — Blowpipe Collectors. Faraday Eng. Co., Boston.

Hydronon—Concrete Waterproofing Paint. Barrett Div., Allied Chemical & Die Corp., New York City.

Hydro-Proof — Water-Proofing Compounds. Asphalt Products Co., Syracuse, N. Y.

Hydro-Whirl—Dust Collectors. Industrial Sheet Metal Works, Inc., Detroit.

Hy-Duty—Blades, Fans, Blowers, Housings, Pumps, Ventilators, Wheels, Schwitzer-Cummins Co., Indianapolis, Ind.

Hy-Power—Snips and Shears. Wiss & Sons Co., J., Newark, N. J.

Hyspar—Roof Cement, Compounds, Paint. Midland Paint & Varnish Co., Cleveland.

Hytemp—Insulation. Keasbey & Mattison Company, Ambler, Pa.

Hytempite—Furnace Cement. Quigley Company, Inc., New York City.

Hytest—Paint. National Mfg. Co., Tonawanda, N. Y.

I

IEC—Relays, Switches. Industrial Engineering Corp., Terre Haute, Ind.

Ice-O-Matic—Compressors. Williams Oil-O-Matic Heating Corp., Bloomington, Ill.

Ideal—Furnace Brushes. Worcester Brush & Scraper Co., Worcester, Mass.

Ideal—Roofing Nails. Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Ideal (Air Cell)—Insulation. Hinde & Dauch Paper Co., Sandusky, Ohio.

Ilgair—Fans. Ilg Electric Ventilating Co., Chicago, Ill.

Ilgette—Kitchen Exhaust Fans. Ilg Electric Ventilating Co., Chicago.

Impact—Spray Nozzles. Phillips Cooling Tower Co., Inc., New York City.

In-Bilt—Kitchen Exhaust Fans. Victor Electric Products, Inc., Cincinnati.

Inco—Paint. Inter-Coastal Paint Co., East St. Louis, Ill.

Inco—Nickel Alloys and Welding Rod. International Nickel Co. Inc., New York City.

Inconel—Alloys. International Nickel Company, Inc., New York City.

Independent — Furnaces. Independence Stove & Furnace Co., Independence, Mo.

Indian—Furnaces. Dowagiac Steel Furnace Co., Dowagiac, Mich.

IngAclad—Plates and Sheets. Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.

Ingels—Elbow Machines and Punches. Maplewood Machinery Co., Chicago.

Ingle—Oil Burners and Furnaces. National Iron Works, San Diego, Cal.

Ingot Iron—Sheets, Ridge Rolls and Ridging. American Rolling Mill Co., Middletown, Ohio.

Inkstop—Filters. Air-Maze Corporation, Cleveland

Insa-Lute — Insulating Cement. Sauereisen Cements Co., Pittsburgh, Pa.

Ins-Lite—Building and Duct Insulation. Insulite Div. Minnesota and Ontario Paper Co, Minneapolis

Insulag—Insulation and Insulating Cement. Quigley Co., Inc., New York City.

Insulblox—Insulation. Quigley Co., Inc., New York City.

Insulate-Windows — Heat Insulating Windows. Chamberlin Metal Weather Strip Co., Inc., Detroit.

Insulbrick — Insulation. Quigley Co., Inc., New York City.

Insulcrete—Insulation. Quigley Co., Inc, New York City.

Insulduct—Prefabricated Ducts. Smith-Raymond Co., Columbus, Ga.

Interlox—Plastic Tee. Extruded Plastics, Inc., Norwalk, Conn.

Ionaire—Ozone Apparatus. Electroaire Corp., Chicago.

Interlock—Pipe. Milcor Steel Co., Milwaukee, Wis.

Ironite—Hot Surface Paint. Acorn Refining Co., Cleveland.

Ironset—Furnace Cement. Fireline Stove & Furnace Lining Co., Chicago, Ill.

Ironside—Paint. Thompson & Co., Pittsburgh, Pa.

Ironton—Gas Burners, Heaters. Continental Stove Corp., Ironton, O.

Isl City—Registers. Rock Island Register Co., Rock Island, Ill.

Iso-Tem—Automatic Heat Control. Tem Products Co., Midland, Pa.

Ivanhoe—Heaters. Perfection Stove Co.. Inc., Cleveland.

J

JFS—Variable Speed Pulleys. Stephens-Adamson Mfg. Co., Aurora, Ill.

J-M—Insulation, Roofing. Johns-Manville, New York, N. Y.

J.M.C.—Oil Burners. Johnson Mfg. Co., Waterloo, Iowa.

Jack Frost—Insulation. Barrett Div., Allied Chemical & Die Corp., New York City.

Janitrol—A. C. Units, Gas Burners, Furnaces. Surface Combustion, Toledo.

Jennings—Pumps. Nash Engineering Co., South Norwalk, Conn.

Jet-O-Matic—Water Circulating Pumps. Gould Pumps Inc., Seneca Falls, N. Y.

Jewel—Furnaces, Heaters. Detroit-Michigan Stove Co., Detroit.

Jiffee—Coils. Hotstream Heater Co., Cleveland, O.

Jiffy — Regulator Set. Parker-Kalon Corp., New York City.

Jumbo—Oil Burners. The Aldrich Co., Wyoming, Ill.

June-Aire—Furnaces. American Foundry & Furn. Co., Bloomington, Ill.

Juniata—Soldering Flux. Geo. W. Diener Mfg. Co., Chicago, Ill.

JusRite—Ducts and Furnace Pipe and Fittings. Corbman Bros., Inc., Philadelphia, Pa.

K

K-B—Damper Clips, Tips and Regulator Sets. G. L. Kerentoff, Cincinnati.

KCB—Sheets. Newport Rolling Mill Co. Newport, Ky.

KCB—Eaves Trough and Gutters, Pipe, Ridge Rolls and Ridging, Roofing Globe Iron Roofing & Corrugating Co., Newport, Ky.

K&M—Insulation. Keasbey & Mattison Co., Ambler, Pa.

KO—Oil Burning Water Heaters. Automatic Humidifier Co., Cedar Falls, Iowa.

K.S.V.—Ventilators. Kernchen Co., Chicago, Ill.

Kant Krush—Roof Strainers. Grand Rapids Wire Products Co., Grand Rapids, Mich.

Karatex—Insulation. Blocksom & Company, Michigan City, Ind.

Kast-O-Lite—Refractories. A. P. Green Fire Brick Co., Mexico, Mo.

Kathabar—A. C. Units. Surface Combustion, Toledo, O.

Kaukit—Caulking Compound. L. Sonneborn Sons, Inc., New York City.

Kelsey-Bradley—Furnaces. Kelsey Heating Co., Inc., Syracuse, N. Y.

Kemick—Paint. American Chemical Paint Co., Ambler, Pa.

Ken—Flue Gas Analyzers, Anemometers, Baffles, Combustion Chambers, Controls, Humidifiers, Damper Motors, Thermometers and Valves. Barclay, Inc., Robert, Chicago.

Keystone—Heaters. J. V. Patten Co., Sycamore, Ill.

Kimsul — Insulation. Kimberly-Clark Corp., Chicago.

Kitchen-aire—Fans. Allen Corp., Detroit.

Kleen Air—Register Shields. Swing-A-Way Steel Products, Inc., Chicago.

Kleenflo — Filters. Air-Maze Corp., Cleveland.

Klenk's Aviation — Snips, Reiner & Campbell Co.., Inc., Elizabeth, N. J.

Klixon—Controls, Switches, Humidistats, Motors, Relays, Switches, Thermostats. Spencer Thermostat Co., Attleboro, Mass.

Klondike—Welders. Ralph Fern, Scranton, Pa.

Knock-Out—Arc Welders, Buffers, Grinders, Polishers and Sanders. K. O. Lee & Son Co., Aberdeen, S. D.

Kno-Draft—High Velocity Air Diffusers. W. B. Connor Eng. Corp., Dorex Div., New York City.

Kold-Aire—Air Conditioning Units. U. S. Air Conditioning Corp., Minneapolis.

Kolostat—Furnace Draft Regulator. P. C. Timm & Son, Lincoln, Neb.

Konical—Ventilators. Milcor Steel Co., Milwaukee, Wis.

Konver-To-Kol—Conversion Grates. Albert Lea Foundry, Albert Lea, Minn.

Kooler-Aire — Air Conditioning Units. U. S. Air Conditioning Corp., Minneapolis.

Koolshade—Sun Reflecting Screens. Ingersoll Steel & Disc Div., Borg-Warner Corp., Chicago.

Koolstack—Furnaces. Leader Iron Works, Inc., Decatur, Ill.

Koppax—Paint. Koppers Co., Pittsburgh, Pa.

Kor-Ner-Lok—Pittsburgh Lock Forming Machine. Binkley Mfg. Co., Warrenton, Mo.

Kristokrak — Enamels and Lacquers. Zapon Division Atlas Powder Co., North Chicago, Ill.

Kumfort Cooler—Evaporative Coolers. Utility Fan Corporation, Los Angeles.

Kwik-Way—Ladder Brackets. Myers Ladder Equipment Co., Madison, Wis.

L

L. A.—Motors. Louis Allis Co., Milwaukee, Wis.

L & N—Instruments. Leads & Northrup Co., Philadelphia, Pa.

LP—Ducts, Fittings, Grilles, Pipe, Registers and Ventilators. Lamneck Products, Inc., Middletown, Ohio.

L & R—Conductor Pipe. Lamb & Ritchie Co., Cambridge, Mass.

L-R—Flexible Couplings. Lovejoy Flexible Coupling Co., Chicago, Ill.

L-U—Gravity Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Lacq—Lacquers. Glidden Company, Cleveland.

Lakeside—Blowers. Furbio Co., Hermansville, Mich.

Lancol—Stainless Steel Soldering Flux. F. H. Langsenkamp Co., Indianapolis, Ind.

Lastik Wampum—Cement Paint. Lastik Products Co., Inc., Pittsburgh.

Lawson — Heaters. Continental Stove Corp., Ironton, O.

Lead-Base—Solder. Galv-Weld, Incorporated, Dayton, Ohio.

Leader—Oil Burners. Pressure Oil Burners, Inc., York, Pa.

Leader—Oil Burners and Circulating Heaters. Victor Oil Burner Mfg. Co., Hartford, Conn.

Lead-Head—Nails. W. H. Maze Co., Peru, Ill.

Lead-Seal—Roofing Nails. The Deniston Co., Chicago.

Leadtex—Lead-Coated Sheets. Revere Copper and Brass Incorporated, New York City.

Lectro-Shear—Portable Electric Shears. Black & Decker Mfg. Co., Towson, Md. and Van Dorn Electric Tool Co., The, Towson, Md.

Lehigh—Furnaces, Heaters. Pittston Stove Co., Pittston, Pa.

Leonard—Circulating Oil Heater. W. R. Ames Co., San Francisco.

LeRoy—Fan and Gravity Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Liberty—Paint. Carter Paint Co., Liberty, Ind.

Liberty—Ventilators. Penn Ventilating Company, Philadelphia.

Lifetime — Furnaces. Hart & Crouse Corp., Utica, N. Y.

Lifetime—Furnace Pipe Fittings & Accessories. Campbell Heating Co., Des Moines, Ia.

Lightweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Lincoln—Furnaces and Heaters. American Foundry & Furnace Co., Bloomington, Ill.

Lindsay Structure—Cabinets and Casings and Housing Assemblies. Dry-Zero Corporation, Chicago.

Linseal—Furnace Cement. Buckeye Products Co., Cincinnati.

Linestart—Motors. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Lipman—Coils, Compressors. General Refrigeration Div., Yates-American Machine Co., Beloit, Wis.

Liquid Elastigum—Paint and Roofing Cement. Barrett Div., Allied Chemical & Die Corp., New York City.

Lithoform — Metal Protecting Paint. American Chemical Paint Co., Ambler, Pa.

Little Blacksmith—Punches and Slitting Machines. J. F. Kidder Mfg. Co., Inc., Burlington, Vt.

Little Giant—Time Switches. Tork Clock Co., Inc., Mt. Vernon, N. Y.

Llenroc — Fire Doors. Cornell Iron Works, Inc., Long Island City, N. Y.

Lloyd's—Stainless Soldering Flux. Lloyd S. Johnson Co., Chicago.

Lloyd's No. 7—Silver Solder Flux. Lloyd S. Johnson Co., Chicago.

Lo-Blast—Gas Conversion Burners. National Machine Works, Chicago, Ill.

Lo-Boy—Stokers. Whiting Corp., Harvey, Ill.

Lockaire—Insulation Board. Plastergon Wall Board Co., Buffalo.

Lock-Joint—Pipe and Pipe Fittings and Accessories. Milcor Steel Co., Milwaukee.

LoMaintenance—Electric Motors. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

LongLife—Furnaces. Henry Furnace & Fdy. Co,, Cleveland.

Lornate—Chimney Caps & Tops, Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

Lowdensite—Insulation. Insulite Div. Minnesota and Ontario Paper Co., Mineapolis.

Luco—Acid Brushes, Compounds, Flux, Solder. Thos. F. Lukens Metal Co., Philadelphia, Pa.

Ludlite—Stainless Steel, Roofing and Sheets. Allegheny Ludlum Steel Corp., Pittsburgh.

Lumino—Paint. Koppers Co., Pittsburgh, Pa.

Lumitall—Aluminum Paint. National Mfg. Co., Tonawanda, N. Y.

Luxaire—Blower-Filters, Furnaces and Humidifiers. The C. A. Olsen Manufacturing Co., Elyria, O.

Lycnore—Sheets. Lyon-Conklin & Co., Inc., Baltimore.

M

M & E—Compressors, Solder. Merchant & Evans Co., Philadelphia, Pa.

M.F.C.—Gas Floor Furnaces. Moncrief Furnace & Mfg. Co., Inc., Dallas, Tex.

M-H—Controls. Minneapolis-Honeywell Regulator Co., Minneapolis.

M & H—Zinc Sheets. Matthiessen & Hegeler Zinc Co., LaSalle, Ill.

M & M—Humidifiers and Fittings, Nozzles, Switches and Valves. McDonnell & Miller, Chicago, Ill.

M & S—Cork Insulation. Mitchell & Smith, Inc., Toledo, Ohio.

M-VB—Fittings, Valves. Scovill Mfg. Co., Morency-Van Buren Div., Sturgis, Mich.

M/W—Filters. American Air Filter Co., Inc., Louisville, Ky.

Macheta—Fans and Fan Blades. Aerovent Fan Co., Piqua, O.

Mack—Heaters. J. V. Patten Co., Sycamore, Ill.

Magic Dial—Thermostats. Perfex Corporation, Milwaukee.

Magic Spray—Oil Burners. Conco Corporation, Mendota, Ill.

Magic-Weather—Air Conditioners, Blowers and Air Washers. Ballantyne Co., Omaha.

Majestic—Roofing, Skylights, Ventilators. W. A. Fingles, Inc., Baltimore.

Manganend—Electrodes. Arcos Corporation, Philadelphia.

Manganweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Mark Time—Time Switches. M. H. Rhodes, Inc., Hartford, Conn.

Marlox—Metal Protecting Paints. Marley Chemical Co., Detroit.

Mars—Furnaces. Pacific Gas Heating Co., San Francisco.

Marsh Jacuzzi—Pumps. American-Marsh Pumps, Inc., Grand Rapids, Mich.

Marvel—Punches. Armstrong-Blum Mfg. Co., Chicago, Ill.

Mascobond—Furnace Cement and Insulation. Munn and Steele, Inc., Newark, N. J.

Mascote—Insulating Cement and Duct Insulation. Munn and Steele, Inc., Newark, N. J.

Massachusetts—Blowers, Fans. Bishop & Babcock Mfg. Co., Cleveland, O.

Master—Controls, Pulleys, Thermostats. White Mfg. Co., St. Paul, Minn.

Master—Air Conditioning Furnaces. Premier Furnace Co., Dowagiac, Mich.

Master—Hangers and Fittings. Royal-Apex Mfg. Corp., Brooklyn, N. Y.

Master—Stokers. Muncie Gear Works, Inc., Muncie, Ind.

Master Blowertrol — Thermostatic Hydraulic Control. White Mfg. Co., Minneapolis.

Masterfil—Insulation. B. F. Nelson Mfg. Co., Minneapolis.

Master Kraft—Air Conditioning Units, Furnaces, Coils, Oil Burners, Regulators and Heat Savers. Harvey-Whipple, Inc., Springfield, Mass.

Master Line—Soldering Torches. Turner Brass Works, Sycamore, Ill.

Mastr-Lok—Pipe Fittings. Parkersburg Iron & Steel Co., Parkersburg, W. Va.

Max-i-min—Furnaces. The Gehri Co., Tacoma, Wash.

Mayari R—Nickel-Chromium Sheets and Plates. Bethlehem Steel Co., Bethlehem Pa.

McIlvaine—Oil Burners. Landwehr Heating Corp., Philadelphia, Pa.

Mecco—Doors and Shutters, Skylights, Ventilators. Moeschl-Edwards Co., Inc., Cincinnati.

Meco—Gas Welding Rod, Torches. Modern Engineering Co., St. Louis.

Meco Jiffy—Soldering Torches. Modern Engineering Co., St. Louis.

Mel-Rock—Ventilators and Washers. Mellish & Murray Co., Chicago.

Metalbestos—Pipe and Fittings. Williams-Wallace Co., San Francisco.

Metal-Coat—Copper Paint. J. W. Stokes, Jr., Brooklyn.

Metallite—Paint. Glidden Company, Cleveland.

Metal-Master—Snips and Shears. J. Wiss & Sons Co., Newark, N. J.

Metalprep—Rust Preventative Chemicals. Neilson Chemical Co., Detroit.

Metaphram—Draft Regulator. Minneapolis-Honeywell Regulator Co., Minneapolis.

Metrotherm—Thermostats. General Controls Co., Glendale, Cal.

Meyco—Furnaces. Meyer Furnace Co., Peoria, Ill.

Micro-Feed—Monmouth Products Co., Cleveland.

Microstat—Thermostats. Julien P. Friez & Sons, Towson, Md.

Microtrol—Damper Motors. Barber-Colman Co., Rockford, Ill.

Microtherm—Thermostats. Barber-Colman Co., Rockford, Ill.

Micro-Weld—Spot Welders. Micro Products Co., Chicago.

Midget—Bending Brake. A. R. Harris, Hammond, Ind.

Midget — Valves. Maid-O'-Mist, Inc., Chicago.

Midget Kooler-aire — Air Conditioning Units. U. S. Air Conditioning Corp., Minneapolis.

Mighty Midget—Furnaces. Dowagiac Steel Furnace Company., Dowagiac, Mich.

Mighty Midget—Furnaces. Floral City Company, Monroe, Mich.

Mighty Midget Unishear—Shears. Stanley Works, New Britain, Conn.

Mildaire—Furnaces. Parker Heating & Mfg. Co., St. Petersburg, Fla.

Miles—Blowers. Henry Furnace & Foundry Co., Cleveland.

Miles, Jr.—Propeller Furnace Fans. Henry Furnace & Foundry Co., Cleveland, O.

Milwaukee—Ventilators. MHcor Steel Co., Milwaukee, Wis.

Mineral Wool Board—Insulation. Armstrong Cork Company, Lancaster, Pa.

Minfelt—Insulating Cement, Insulation. Mitchell & Smith, Inc., Toledo, Ohio.

Minnemeyer—Fittings. LaCrosse Steel Roofing & Corrugating Co., LaCrosse, Wis.

Minute—Damper Regulator Sets. Joal Mfg. Corp., Toledo.

Minute Man — Oil-fired Conditioner. Conco Corporation, Mendota, Ill.

Miracle-Air—Window Ventilators. Reliable Sheet Metal Engineering Co., Chicago.

Missouri Flint—Fire Brick. Chicago Fire Brick Co., Chicago.

Missco—Wire Glass. Mississippi Glass Company, New York City.

Mistoil—Oil Burners. Wayne Oil Burner Corp., Fort Wayne, Ind.

Model—Furnaces, Heaters. Home Stove Co., Indianapolis, Ind.

Modernair—Blower-Filter Units. Payne Furnace & Supply Co., Beverly Hills, Cal.

ModernAire—Air Conditioning Units, Fans. Dallas Eng. Co., Inc., Dallas, Tex.

Moderne-Aire—Furnaces, Blowers. Agricola Furnace Co., Gadsden, Ala.

Modern Console—Heaters. Payne Furnace & Supply Co., Inc., Beverly Hills, Cal.

Moderne—Blowers, Furnaces. Agricola Furnace Co., Inc., Gadsden, Ala.

Modernistic—Heaters. Agricola Furnace Co., Inc., Gadsden, Ala.

Modutrol — Damper Duct Motors and Fan Controls. Minneapolis-Honeywell Regulator Co., Minneapolis.

Mogul — Rust Preventive Chemicals. North American Fibre Products Co., Cleveland.

Moldit—Refractories. Refractory & Insulation Corp., New York City.

Moler—Insulation. F. L. Smidth & Co., New York City.

Monarch—Furnaces. Forest City Foundries Co., Cleveland.

Moncrief—Blower-Filters, Prefabricated Ducts, Pipe Fittings and Accessories, Furnaces, Heaters, Humidifiers. Henry Furnace & Foundry Co., Cleveland, O.

Monel—Sheets. International Nickel Co., Inc., New York City.

Monite — Humidifier Plates. Monmouth Products Co., Cleveland.

Monitor—Furnaces. Marshall Furnace Co., Marshall, Mich.

Monogram — Furnaces. Quincy Stove Mfg. Co., Quincy, Ill.

Mono-Line—Duct Insulation. Quigley Company, Inc., New York City.

Monovent—Ridge Ventilators. Burt Mfg. Co., Akron, Ohio.

Monsoon—Louvers and Shutters. Jamieson Mfg. Co., Dallas, Tex.

Mor-Mac — Furnaces. Morrison Steel Products, Inc., Buffalo.

Morning Air—Furnaces. Jackson Sheet Metal Wks., Ogden, Utah.

Moto-Heat—Oil Burners. Brigham Oil Burner Co., St. Louis, Mo.

Motopump—Water Circulating Pumps. Yeomans Bros. Co., Chicago.

Motorelay—Contact Device. Barber-Colman Co., Rockford, Ill.

Mototurb—Ventilators. Uno Ventilator Co., Cliftondale, Mass.

Mule-Hide—Caulking Compounds, Paint and Roofing. Lehon Company, Chicago.

Multiclone—Collectors. Research Corp., New York, N. Y.

Multi-Panel—Filters. American Air Filter Co., Inc., Louisville, Ky.

Multiple Star—System of Welding. Electric Arc., Inc., Newark, N. J.

Multitherm—Air Conditioning Units. Clarage Fan Co., Kalamazoo, Mich.

Multi-V-Type—Filters. Staynew Filter Corp., Rochester, N. Y.

Multivane—Blowers. B. F. Sturtevant Co., Hyde Park, Boston.

Multi-Zone—Conditioners. Michell Air Conditioning Co., Inc., Schenectady, N. Y.

Murex—Arc Welding Electrodes. Metal & Thermit Corp., New York City.

N

Nairoil—Oil Burners. National Airoil Burner Co., Philadelphia, Pa.

National—Blowers, Furnaces. P. H. Ma-Girl Foundry & Furnace Wks., Bloomington, Ill.

National—Furnaces, Heaters. Excelsior Stove & Mfg. Co., Quincy, Ill.

National — Registers. United States Register Co., Battle Creek, Mich.

Natrecc—Paint. National Mfg. Corp., Tonawanda, N. Y.

Naturzone—Board Insulation. Wilson & Co., Inc., Chicago.

Nelson—Stokers. Heating Assurance, Spokane, Wash.

Nesbit—Furnaces. Standard Furnace & Supply Co., Omaha, Nebr.

Nev-A-Rust—Protective Metal Coatings. Glidden Company, Cleveland.

Never Slip — Conductor Fittings. LaCrosse Steel Roofing & Corrugating Co., LaCrosse, Wis.

New American—Smoke Pipe Dampers. Griswold Mfg. Co., Erie, Pa.

New Departure—Aldrich Company, Wyoming, Ill.

New Detroit—Draft Gages. Detroit Air Conditioning Service Co., Inc., Detroit.

Newmanco—Kalamein Doors, Grilles. Newman Brothers, Inc., Cincinnati, O.

Newton — Mallets. Warren Handle Works Co., Cortland, Ohio.

Niagara—Furnaces. Forest City Foundries Co., Cleveland, O.

Nickelchromeweld — Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Nickeloid—Sheets. American Nickeloid Co., Peru, Ill.

Niteair—Night Air Cooling Fans. Lau Blower Co., Dayton, Ohio.

Nitrol—Spray Nozzles. Hubbard Company, Minneapolis.

Neel—Arc Welders. The Ideal Electric & Mfg. Co., Mansfield, O.

No-Flex—Registers and Faces. Hart & Cooley Mfg. Co., Holland, Mich.

Nokorode—Flux. Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

Non-Clogging—Spray Nozzles. Link Belt Co., Chicago.

Non-Con-Dux — Cement, Insulation, Paper, Paste. Grant Wilson, Inc., Chicago, Ill.

Nonoize—Booster Fans. American Foundry & Furnace Co., Bloomington, Ill.

Non-Syphoning—Steel Roofing. Milcor Steel Co., Milwaukee.

Norblo—Blowers, Collectors, and Air Washers. Northern Blower Co., Cleveland, Ohio.

Norco—Products. Northwestern Stove Repair Co., Chicago.

Norfolk—Blower-Filters, Furnaces, Heaters, Humidifiers. Sioux City Foundry and Boiler Co., Sioux City.

Northland—Heaters. J. V. Patten Co., Sycamore, Ill.

North Wind—Window Fans. American Metal Products Co., Fort Worth, Tex.

Nor'wester—Blowers. Grand Rapids Die & Tool Co., Grand Rapids, Mich.

No-Sag—Register Shields. Pentecost & Craft Co., Terre Haute, Ind.

No-Streak—Registers. Rock Island Register Co., Rock Island, Ill.

No. 2000 — Insulating Cement. J. H. Krehbiel Co., Chicago.

No-Ve-U — Door Ventilators. Waterloo Register Co., Waterloo, Iowa.

Novent—Ventilators. Aeolus Dickinson, Chicago.

Novoid—Aluminum Paint. Bases, Insulation. Cork Import Corp., New York, N. Y.

Nu-Air—Air Conditioning Units. American Metal Products, Fort Worth, Tex.

Nu-Air—Blades and Fans. Meier Electric & Machine Co., Indianapolis, Ind.

Nu-Air—Ventilators. Milcor Steel Co., Milwaukee, Wis.

Nu-Alpina—Gravity Roof Ventilators. Milcor Steel Co., Milwaukee, Wis.

Nubrite—Aluminum Paint. Acorn Refining Co., Cleveland.

Nu-Dry—Furnace Cement. Pyrolite Products Co., Cleveland, O.

Nu-Grip—Snips and Shears. J. Wiss & Sons Co., Newark, N. J.

Nu-Notch—Ventilators. Knowles Mushroom Ventilator Co., Montclair, N. J.

Nuroof—Roof Cement. Acorn Refining Co., Cleveland.

Nussbaum—Furnaces. American Standard Gas Products Co., Detroit.

NuSteel—Stainless Cleaner. United States Steel Supply Co., Chicago.

Nusurface—Hot Surface Paint. Acorn Refining Co., Cleveland.

Nutipe—Gas Conversion Burners. Columbia Burner Company, Toledo.

Nu-Way—Sheet Metal Products. Beatrice Steel Tank Mfg. Co., Beatrice, Nebr.

Nu-Wood—Rigid Insulation. Wood Conversion Co., St. Paul.

O

O-B Bulldog — Expansion Bolts. Ohio Brass Co., Mansfield, Ohio.

OK—Conductor Pipe Strainers. U. S. Cistern Filter Mfg. Co., Bloomington, Ill.

O. P.—Stokers and Stoker-fired Furnaces. Pocahontas Fuel Company Incorporated, Cleveland.

Oil Chief—Furnaces. Dowagiac Steel Furnace Company, Dowagiac, Mich.

Oil-Economy — Oil-Burning Air-Conditioning Furnace. International Heater Co., Utica, N. Y.

Oil "Fire"—Furnaces. McPherson Furnace & Supply Co., Portland, Ore.

Oilfire Monogram—Furnaces. Quincy Stove Mfg. Co., Quincy, Ill.

Oilfyre—Furnaces. Lennox Furnace Co., Marshalltown, Iowa.

Oil Mizer—Furnaces. Floral City Company, Monroe, Mich.

Oil-n-Aire—Oil Burners. Aldrich Co., Wyoming, Ill.

Oil-O-Matic—Oil Burners. Williams Oil-O-Matic Heating Corp., Bloomingington, Ill.

Olympic Bronze — Bolts, Electrodes, Plates, Sheets. Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

Orsatomat—Flue Gas Analyzer. Hays Corp., Michigan City, Ind.

Oshkosh—Stokers. Leach Co., Oshkosh, Wis.

Out-O-Wall—Registers. Rock Island Register Co., Rock Island, Ill.

Ovaltube—Gas Burners. Beck Engineering Combustion Kompany, St. Louis.

Oxweld—Welding Apparatus. Linde Air Products Co., New York, N. Y.

Ozite—Insulation. American Hair & Felt Co., Chicago.

P

PBA Unit — Utility Room Furnace. Dowagiac Steel Furnace Co., Dowagiac, Mich.

P & H—Arc Welding Electrodes. Harnischfeger Corporation, Milwaukee.

P & H Hansen—Arc Welders. Harnischfeger Corp., Milwaukee, Wis.

P & R—Air Conditioning Units, Furnaces and Pumps. Pernot & Rich, Inc., Los Angeles.

Pac—Air Conditioning Units, Blower-Filters, Blowers, Valves. Pacific Airmax Corp., Huntington Park, Calif.

Pacifelt—Insulation. Pacific States Felt & Mfg. Co., Inc., San Francisco.

Pacific—Furnaces. W. W. Rosebraugh Co., Salem, Ore.

Pacific-Everlast—Furnaces. Pacific Airmax Corporation, Huntington Park, Calif.

Pacific-Superior—Furnaces. Pacific Airmax Corporation, Huntington Park, Calif.

Packaged Weather—Store Coolers. General Electric Co., Bloomfield, N. J.

Paintgrip—Sheets. American Rolling Mill Co., Middletown, Ohio.

Palco Wool—Saferized—Insulation. Pacific Lumber Co., San Francisco, Cal.

Panama—Registers. United States Register Co., Battle Creek, Mich.

Paramount — Flashing. Flemm Lead Company, Inc., Long Island City, N. Y.

Paramount—Flashings. Rochester Lead Works, Inc., Rochester, N. Y.

Paramount—Hollow Metal Windows. Willis Mfg. Co., Galesburg, Ill.

Parasol—Spray Nozzles. Spraying Systems Co., Chicago.

Parco—Skylight Lifts. Park City Cornice Works, Inc., Bridgeport, Conn.

Par-Exe—Oil Furnaces. Interstate Metal Products Co., Inc., Chicago.

Parkspray—Humidistats and Hygrometers. Parks-Cramer Co., Fitchburg, Mass.

Patterson—Roofing Clips. American Sheet Metal Works, New Orleans.

Payneheat—Heating Units. Payne Furnace & Supply Co., Beverly Hills, Cal.

Pebble—Gravity Registers. Auer Register Co., Cleveland, O.

Peerless—Blowers, Collectors, Washers. New York Blower Co., Chicago, Ill.

Peerless—Eaves Trough Hangers. Abbott Mfg. Co., Painesville, O.

Penflex — Metal Hose. Pennsylvania Flexible Metallic Tubing Co., Philadelphia.

Penn-Aire—Furnaces. Union Mfg. Co., Boyertown, Pa.

Penngun—Water Heaters. Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.

Penn-Mont—Slate. Structural Slate Co., Pen Argyl, Pa.

Pentco—Combination Snip. Penn Tool Company, Philadelphia.
Riverton, Va.

Perfection—Eaves Trough Fittings and Accessories. Iwan Brothers, South Bend, Ind.

Perfection—Mineral Wool Insulation. Riverton Lime & Stone Co., Inc.,

Perfect-Lap Two-Drain—Steel Roofing. Milcor Steel Co., Milwaukee.

Permat—Filters. Davies Air Filter Corp., New York City.

Perry—Damper Clips and Tips. Griswold Mfg. Co., Erie, Pa.

Pet—Oil Burners. Aldrich Co., Wyoming, Ill.

Petro—Oil Burners, Furnaces and Water Heaters. Petroleum Heat & Power Co., Stamford, Conn.

Pexto—Metal Workers' Machines and Tools. Peck, Stow & Wilcox Co., Southington, Conn.

Philco-York — Unit Air Conditioners. Philco, Philadelphia.

Pilot—Fans and Blowers. F. A. Smith Mfg. Co., Inc., Rochester, N. Y.

Pioneer—Oil Burners. Scott-Newcomb, Inc., St. Louis, Mo.

Planeweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Plaster Bond—Compounds. Barrett Div., Allied Chemical & Die Corp., New York City.

Plastic-Calk—Caulking Compounds. Chamberlin Metal Weather Strip Co., Inc., Detroit.

Plastic Elastigum—Cement. Barrett Div., Allied Chemical & Die Corp., New York City.

Plastic PB—Cement. Barrett Div., Allied Chemical & Die Corp., New York City.

Plastiklast—Roof Cement and Waterproofing Compound. Acorn Refining Co., Cleveland.

Plastiktrim—Plastic Mouldings, Trim, and Tubing and Fittings. R. F. Werner Co., New York City.

Plastite—Caulking Compounds. U. S. Stoneware Co., Akron, Ohio.

Plastoid—Compounds, Furnace Cement. Plastic Products Co., Detroit, Mich.

Plexiform—Blowers. Bayley Blower Co., Milwaukee, Wis.

Pliavane—Grilles and Registers. Tuttle & Bailey, Inc., New Britain, Conn.

Plicast — Hearth Cement Refractories. Plibrico Jointless Firebrick Co., Chicago, Ill.

Plicast L-W-I—Insulating Refractory. Plibrico Jointless Firebrick Co., Chicago.

Pluramelt—Stainless Clad Sheets. Allegheny Ludlum Steel Corp., Pittsburgh.

Plymco—Air Filters. Anderson Products, Inc., Cambridge, Mass.

Plymco—Air Filters. Plymouth Cordage Co., North Plymouth, Mass.

Poeco—Insulation. C. W. Poe Co., Cleveland.

Polair—Air Conditioning Units. Pernot and Rich, Inc., Los Angeles.

Polar Giant—Air Conditioning Units. Giant Manufacturing Co., Council Bluffs, Iowa.

Porcelite—Tile. Columbian Enameling & Stamping Co., Inc., Terre Haute, Ind.

Portage—Furnaces. XXth Century Heating & Ventilating Co., Akron, O

Positive Arc—Arc Welders. Welding Apparatus Co., Chicago, Ill.

"Power-Flex"—Stokers. Link Belt Co., Chicago.

Powerstat—Valves. Mercoid Corp., Chicago.

Precipitron—Automatic Air Filter. Westinghouse Electric & Manufacturing Co., Cleveland.

Premier—Furnace Vacuum Cleaner. Electric Vacuum Cleaner Co., Inc., Cleveland, O.

Premier Automatik—Stoker-Fired Air Conditioning Furnaces. Premier Furnace Co., Dowagiac, Mich.

Premier DeLuxe—Furnaces. Premier Furnace Co., Dowagiac, Mich.

Premier Master—Furnaces. Premier Furnace Co., Dowagiac, Mich.

Pre-Notch—Ducts, Pipe and Fittings. Gray Metal Products, Inc., Rochester, N. Y.

Preprite—Rust Preventive Chemicals. Neilson Chemical Co., Detroit.

Prepwash—Rust Preventive Chemicals. Neilson Chemical Co., Detroit.

Presstico—Furnace and Roof Cement, Compounds, Paint. Presstite Engineering Co., St. Louis.

Presteel—Metal Stampings. Worcester Pressed Steel Co., Worcester, Mass.

Presteel—Fan Housings. Commercial Shearing & Stamping Co., Youngstown, Ohio.

Prest-O-Lite—Soldering Coppers, Soldering Torches, Welding Equipment. Linde Air Products Co., New York, N. Y.

Prest-O-Weld—Oxy-Acetylene Welding Equipment, Torches. Linde Air Products Co., New York, N. Y.

Princo — Hygrometers, Psychrometers, Electric Relays, Thermometers and Thermostats. Precision Thermometer and Instrument Co., Philadelphia.

Protection — Soldering Furnaces and Torches. Clayton & Lambert Mfg. Co., Detroit, Mich.

Protectolite — Thermostats. Sampsel Time Control, Inc., Spring Valley, Ill.

Protectomotor—Filters. Staynew Filter Corp., Rochester, N. Y.

Protector—Snow Guards. David Levow, New York City.

Protectorelay—Electric Relays. Minneapolis-Honeywell Regulator Co., Minneapolis.

Pul-Air—Ventilators. Lyon, Conklin & Co., Inc., Baltimore.

Pul-Air—Ventilators. Penn Ventilating Co., Philadelphia.

Pulverzone—Stokers. American Coal Burner Co., Chicago, Ill.

Punchawl—Tools. Hub Specialty Co., Somerville, Mass.

Punkah—Louvres. Kelvin-White Co., Boston.

Purox—Oxy-Acetylene Welding Equipment and Torches. Linde Air Products Co., New York, N. Y.

Pyralux—Enamels and Lacquers. E. I. du Pont de Nemours & Co., Wilmington, Del.

Pyrobar—Roofing Tile. United States Gypsum Co., Chicago.

Pyrofelt—Furnace Insulation. Mitchell & Smith, Incorporated, Toledo, O.

Q

Q-Chrome—Insulating Cement. Quigley Company, Inc., New York City.

Q-Chromatic—Insulating Cement. Quigley Company, Inc., New York City.

Q-Deck—Roofing. H. H. Robertson Co., Pittsburgh.

Q-T Ductliner—Celotex Corp., Chicago.

Quaker Burnoil—Oil Burners, Furnaces and Heaters. Quaker Mfg. Co., Chicago.

Quaker City—Eaves Trough and Gutters, Conductor Fittings and Accessories, Pipe, Ridge Rolls and Ridging. Berger Brothers Company, Philadelphia.

Queen City—Shears. Niagara Machine & Tool Works, Buffalo, N. Y.

Quick Heat—A. C. Furnace. American Stove Co., Lorain, O.

Quick Heater—Oil Burners. Quick Furnace & Supply Company, Des Moines, Ia.

Quick-Set—Dividers. Reiner & Campbell, Inc., Elizabeth, N. J.

Quiet-Air—Furnace Blowers. Maple City Stamping Co., Peoria, Ill.

Quiet May—Air Conditioning Furnaces, Units, Oil Burners. May Oil Burner Corp., Baltimore, Md.

"Quilt"—Insulation. Samuel Cabot, Inc., Boston.

R

R & G — Grilles, Registers. Register & Grille Mfg. Co., Inc., Brooklyn.

RB—Flexible Couplings. Link Belt Co. Chicago.

r/h—Furnaces. Rybolt Heater Company, Ashland, Ohio.

R & I—Furnace Cement and Insulation. Refractory & Insulation Corp., New York City.

R & I—Nutipe—Combustion Chambers. Refractory & Insulation Corp, New York City.

R & M—Motors. Robbins & Myers, Inc., Springfield, O.

R.M.C.—Burners. Rotary Mfg. Co., Los Angeles, Cal.

RPM—Flashing and Roofing Steel. H. H. Robertson Co., Pittsburgh.

RP—Filters. Research Products Corporation, Madison, Wis.

R-R-M — Hygrometers, Psychrometers. The Palmer Co., Cincinnati.

"R" Series—Furnaces. Sure Comfort Furnace Co., Berwyn, Ill.

R-U-F—Fans and Ventilators. Reed Unit-Fans, Inc., New Orleans, La.

Race—Air Conditioning Units and Gas Furnaces. Royal Air Conditioning Equipment, Alhambra, Cal.

Racine—Time Switches. Reliance Automatic Lighting Co., Racine, Wis.

Radiation Discs—Stoker Baffles. Munn and Steele, Inc., Newark, N. J.

Radi-Ion—Ozone Apparatus. Montgomery Brothers, San Francisco.

Radolite—Insulating Cement and Refactories. Pyrolite Products Co., Cleveland, Ohio.

Radiant Heat—Baffles. Jones Products Company, Ferndale, Mich.

Rainbow Mist—Nozzles. National Engineering & Manufacturing Co., Kansas City, Mo.

RainSeal—Roofing. Reeves Steel & Mfg. Co., Dover, Ohio.

Raintite — Roof Ventilators. Aeolus Dickinson, Chicago.

Ralpo—Sheet Metal Cutters. Ralph W. Poe, Canton, Ill.

Ramco—Chimney Caps and Tops. Royal-Apex Mfg. Corp., Brooklyn.

Rapid Fire—Furnaces and Heaters. Reynolds Mfg. Co., Springfield, Mo.

Ratox—Venetian Blinds. Hough Shade Corp., Janesville, Wis.

Rawl-Anchors—Bolts, Rawlplug Company, Inc., New York City.

Rawl-Drive—Masonry Nails and Expansion Bolts. Rawlplug Co., Inc., New York City.

Rawls—Expansion Bolts. Rawlplug Co., Inc., New York City.

Reactance Arc—Portable Welders. Miller Electric Mfg. Co., Inc., Appleton, Wis.

Readyweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Reco—Fans and Motors. Reynolds Electric Co., Chicago.

Recoy—Air Conditioning Units and Coils. Refrigeration Economics Co., Inc., Canton, O.

Red Devil—Furnace Cement. Pecora Paint Co., Philadelphia.

Redi—Stokers. General Machinery Co., Spokane, Wash.

Redi-Lift — Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.

Redi-Nail—Eaves Trough Hangers. Abbott Mfg. Co., Painesville, O.

Redi-Set—Rivet Squeezer. Whitney Metal Tool Co., Rockford, Ill.

Red Metallic—Roofing Paint. Clinton Metallic Paint Co., Clinton, N. Y.

Redox—Paint. Thompson & Co., Pittsburgh, Pa.

Red-Reading-Mercury — Hygrometers, Psychrometers, and Thermometers. The Palmer Co., Cincinnati.

Red Spindle—Dampers. Stover Mfg. & Engine Co., Freeport, Ill.

Red Top—Insulation. United States Gypsum Co., Chicago, Ill.

Red Top—Thermostats. H-B Instrument Company, Philadelphia, Pa.

Rego—Brazing Torches. National Cylinder Gas Co., Chicago.

Reillaloy—Stove and Furnace Repairs. Pittsburgh Furnace Parts Co., Pittsburgh, Pa.

Renarex—CO_2 Analysers. Permutit Co., New York City.

Renn—Filters. American Air Filter Co., Inc., Louisville, Ky.

Renuvent—Steel Wool Filters. American Air Filter Co., Inc., Louisville, Ky.

Republic—Gas Conversion Burners. Autogas Corp., Chicago, Ill.

Republic-Taylor—Terne Roofing Plates. Republic Steel Corporation, Cleveland.

Rex—Bearings, Pillow Blocks, Blower-Filter Units, Blowers, Fan-Filter Units, Blower Wheels. Air Controls, Inc., Cleveland.

Rex—Furnaces. Calkins & Pearce, Columbus, O.

Rex—Spot Welders. Dyer Welder & Engineering Co., Kansas City, Mo.

Rex-Airate—Fans, Ventilators. Air Controls, Inc., Cleveland, O.

Rex-Air-Pak—Blower Units. Air Controls, Inc., Cleveland, O.

Rexco—Refractories. Rex Clay Products Co., Detroit.

Rexide—Metal Protecting Paint. A. C. Horn Co., Long Island City

Rexoil—Oil Burners, Furnaces. Reif-Rexoil, Inc., Buffalo, N. Y.

Rex-Roto—Combustion Chambers, Refractories. Rex Clay Products Co., Detroit.

Rexvane—Blowers. B. F. Sturtevant Co., Boston.

Rex Vibra-Sorbers—Vibration Eliminating Metal Hose. Chicago Metal Hose Corporation, Maywood, Ill.

Reynolds—Ducts and Dust Fittings, Dampers. Richmond Radiator Co., Inc., Uniontown, Pa.

Rezistal — Stainless Steels. Crucible Steel Co. of America, New York.

Rhinamel—Enamels. Tropical Paint & Oil Co., Cleveland.

Rhino—Caulking and Glazing Compounds. Pecora Paint Co., Philadelphia.

Rich-Con—Ventilators. A-J Mfg. Co., Kansas City, Mo.

Ridgolator — Ridge Roof Ventilator. Klauer Mfg. Co., Dubuque, Ia.

Rincon-trol—Enamels and Lacquers. Roxalin Flexible Finishes, Inc., Elizabeth, N. J.

RiP-Clean—Filters. Research Products Corporation, Madison, Wis.

Rip-o-Lin—Enamels. Glidden Company, Cleveland.

Rip-pl—Enamels, Lacquers and Paints. Hilo Varnish Corp., Brooklyn.

Riverside—Furnaces. Rock Island Stove Co., Rock Island, Ill.

R.I.W.—Paint and Waterproofing. Toch Bros., Inc., Elm Pk., S. I., N. Y.

R. I. W. Liquir Konkerit—Paint. Toch Bros., Inc., Elm Pk., S. I., N. Y.

R. I. W. Plug-A-Leak—Roofing Paint. Toch Bros., Inc., Elm Pk., S. I., N. Y.

Robinson—Brakes, Presses and Dies, Punches. New Albany Machine Mfg. Co., New Albany, Ind.

Rocan—Copper Roofing and Sheets. Revere Copper and Brass Incorporated, New York City.

Rocho—Paint Spray Guns. Binks Mfg. Co., Chicago.

Rocktex—Insulation. Philip Carey Co., Lockland, Cincinnati, O.

Rohaco—Blowers, Pipe Fittings and Accessories, Furnaces, Grilles, Pipe, Registers, Heat Savers. Roberts-Hamilton Co., Minneapolis.

Rollaire—Air Conditioning Furnaces. Hipoint Corp., Bellefontaine, O.

Roof Flange—Flashing. Eagle-Picher Lead Co., Cincinnati.

Roofkoter—Paint. Tropical Paint & Oil Co., Cleveland, O.

Roofloy—Lead Roofing and Sheets. Revere Copper and Brass Incorporated, New York City.

RoofSaver—Roofing Nails. Dickson Weatherproof Nail Co., Evanston, Ill.

Rosco—Flashings. Roof Specialties Co., Inc., Pittsburgh.

Rotary—Gravity Ventilators. The Swartwout Co., Cleveland.

Rotary Suction — Ventilators. F. O. Schoedinger, Columbus, Ohio.

Rotex—Punches and Shears. M. Bollaert Oakland, Cal.

Roto—Insulating Cement and Combustion Chambers. Rex Clay Products, Co., Detroit.

Roto-Blast — Furnaces. Moncrief Furnace Co., Atlanta, Ga.

Roto-Clone—Dust Collectors. American Air Filter Co., Inc., Louisville, Ky.

Rotojet—Nozzles. Binks Mfg. Co., Chicago, Ill.

Roxaprene—Enamels and Lacquers. Roxaline Flexible Finishes, Inc., Elizabeth, N. J.

Royal—Caulking Compounds, Cement, Enamels, Lacquers, Waterproofing, Paint. A. Wilhelm Co., Reading, Pa.

Royal—Furnaces. Hart & Crouse Corporation, Utica, N. Y.

Royalastic—Roof Cement. A. Wilhelm Co., Reading, Pa.

Royalbestos—Furnace Cement. A. Wilhelm Co., Reading, Pa.

Royal Blue—Acid and Furnace Brushes. Schaefer Brush Mfg. Co., Milwaukee, Wis.

Rubalt—Enamels, Lacquers and Paint. Alfred Hague & Co., Inc., Brooklyn, N. Y.

Rubyfluid—Solder, Soldering Flux, Tinning Compounds. Ruby Chemical Co., Columbus, O.

Rudico—Furnaces. Rudy Furnace Co., Dowagiac, Mich.

Rudisteel—Furnaces. Rudy Furnace Co., Dowagiac, Mich.

Rusco — Windows. Russell Co., F. C., Cleveland.

Rustnil—Paints. National Engineering Products, Inc., Washington, D. C.

S

S—Sheets. The Superior Sheet Steel Co., Canton, Ohio.

S-C—Furnaces, Surface Combustion. Toledo, O.

S-E—Gravity Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.

SF—Soldering Coppers, Torches, Welders. Sight Feed Generator Co., Richmond, Ind.

S. I. S.—Cement. Barrett Div., Allied Chemical & Die Corp., New York City.

S-L—Bar Folders, Nibblers, Slitting Machines. St. Louis Tool Co., St. Louis.

S-N—Furnaces, Oil Burners, Stokers, Scott-Newcomb, Inc., St. Louis, Mo.

S O S—Variable Speed Pulleys. Ideal Commutator Dresser Co., Sycamore, Ill.

SRP—Metal Protecting Paint. L. Sonneborn Sons, Inc., New York City.

Saf-ty—Mallets. Martin Bersted Co., Chicago, Ill.

St. Louis—Stoker. Ormsby-Osterman Co., St. Louis.

Sair Seal — Insulating Cement. A. P. Green Fire Brick Co., Mexico, Mo.

Sal-Mo—Cement, Insulation, Pipe Coverings. Sall Mountain Co., Chicago, Ill.

Samco—Cement. Standard Asbestos Mfg. Co., Chicago, Ill.

Sampson—Furnace Brushes. Worcester Brush & Scraper Co., Worcester, Mass.

Sanidaire—Humidifiers. U. S. Air Conditioning Corp., Minneapolis, Minn.

saran—Plastic Tubing and Fittings. Acadia Synthetic Products Div., Chicago. Dow Chemical Co., Midland, Mich. Skuttle Mfg. Co., Detroit. Hodgman Rubber Co., Framingham, Mass.

Satis-Fyre—Oil Burners. Shedlov Oil Burners, Inc., Minneapolis, Minn.

Sauter—Time Switches. R. W. Cramer Co., Inc., Centerbrook, Conn.

Sav-Haf—Oil Burners. Aldrich Co., Wyoming, Ill.

Schmidt—Soldering Coppers, Soldering and Brazing Torches. Minn-Kota Foundry & Mfg. Co., Fargo, N. D.

Sco-Co—Roof Cement, Compounds, Paint, Roofing and Waterproofing. Southport Paint Co., Savannah, Ga.

Scroll-Pivoter—Snips and Shears. Wiss & Sons Co., J., Newark, N. J.

Scruplex—Fans and Ventilators. L. J. Wing Mfg. Co., New York, N. Y.

Seal-Cote — Metal Protecting Lacquer. Fales Chemical Co., New York City.

Sea-Lion — Leather Belting. Chicago Belting Co., Chicago.

Seal-Less—Condensing Units. Westinghouse Electric & Mfg. Co., East Springfield, Mass.

Seal Master—Bearings. Stephens-Adamson Mfg. Co., Aurora, Ill.

Seal of Quality—Roofing. Columbia Steel Co., San Francisco, Cal.

Sealpruf—Waterproofing. General Insulating Products Co., Brooklyn.

Seal-Tite — Registers. Char-Gale Mfg. Co., Minneapolis.

Seal-Tite—Roof Cement. C. Arthur Miller & Son, Elmira, N. Y.

Seamless — Air Conditioners, Furnaces. Waterman-Waterbury Co., Minneapolis, Minn.

Security—Caulking and Roofing. National Mfg. Corp., Tonawanda, N. Y.

Seisme-Dampers — Vibration Isolating Bases. Korfund Co., Inc., Long Island City.

Selectair—Air Conditioning Units and Oil Furnaces. S. T. Johnson Co., Oakland, Cal.

Self-Cleaning—Furnaces. Moore Corp., Joliet, Ill.

Self-Seal Re-Fil-Able—Filters. Research Products Corporation, Madison, Wis.

Self-Stoker—Furnaces. Viking Manufacturing Corporation, Dayton, Ohio.

Selfvulc — Waterproofing Compounds, Paint. Self-Vulcanizing Rubber Co., Inc., Chicago.

Semco—Crimping and Slitting Machines, Presses and Dies, Punches, Snips and Shears. Service Machine Co., Elizabeth, N. J.

Sensatherm — Thermostats. Mercoid Corp., Chicago.

Sensitrol—Electrical Relays. Weston Electrical Instrument Corp., Newark, N. J.

Sentinel—Floor Furnaces. Stoker-Lad, Inc., Tacoma, Wash.

Sentry—Furnaces. Payne Furnace & Supply Co., Beverly Hills, Cal.

70 Serviceman—Recording Thermostat. Jas. P. Marsh Corp., Chicago.

Sheetrock—Duct Board. United States Gypsum Co., Chicago.

Shield-Arc—Electrodes and Welders. Lincoln Electric Co., Cleveland, O.

Shock Absorbing—Pillow Blocks. Triangle Mfg. Co., Oshkosh, Wis.

Shock Pads—Vibration Isolating Pads. B. T. Butterworth, Jr., New Canaan, Conn.

Shower-Proof—Paint. Calbar Paint & Varnish Co., Philadelphia, Pa.

Shur-Heat—Stokers. Air Conditioning & Stokers, Inc., St. Louis.

Shut-O-Vent—Louvers and Shutters. Reed Unit-Fans, Inc., New Orleans.

Sievert — Soldering Furnaces and Torches. Van Praag Sales, New York City.

Silent—Furnace Blowers. Air Conditioning Equipment Co., Minneapolis.

Silent Air—Fans and Blades. Belanger Fan & Blower Co., Detroit.

Silentair—Blowers, Filters. Gehri Co., Tacoma, Wash.

Silentaire—Window Ventilator and Filter Units. Berger Mfg. Div., Republic Steel Corp., Canton, Ohio.

Silent-Auburn—Oil Burners, Furnaces, Heaters. Auburn Burner Co., Auburn, Ind.

Silent Automatic—Louvers & Shutters, Airecon Industries, Inc., Detroit.

Silentblu—Gas Burners. Beck Engineering Combustion Kompany, St. Louis.

Silentvane—Blowers. B. F. Sturtevant Co., Boston.

Silere—Fans. Aire-Foile Fan & Blower Company, Detroit, Mich.

Sil-Fos—Solder. Handy & Harman, New York City.

Silicair — Insulation. Western Silicair Products, Inc., Burbank, Cal.

Siloy-Soder—Solder. L. B. Allen Co., Inc., Chicago.

Silver-Ply—Stainless Clad Sheets. Jessop Steel Co., Washington, Pa.

Silver-Soder—Solder. L. B. Allen Co., Inc., Chicago.

Silver Steel—Saws. E. C. Atkins & Co., Indianapolis, Ind.

Silver-Seal—Aluminum Paint. Asphalt Products Co., Syracuse, N. Y.

Simplex—Quadrants. Ohio Products Co., Cleveland.

Simplate—Pneumatic Hammer. Chicago Pneumatic Tool Co., New York City.

Simplex—Humidifiers. Henry Kraker, Holland, Mich.

Simplex—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Simplex—Stoker. Stoker Products, Inc., Decatur, Ill.

Sim-trol—Smoke Pipe Draft Regulators. Simplex Mfg. Co., Fond du Lac, Wis.

Sirocco—Air Conditioning Units, Blowers, Fans, Ventilators, Washers. American Blower Corp., Detroit.

Skildrill—Electric Drill. Skilsaw, Inc., Chicago.

Slaters' Felt—Insulation. Barrett Div. Allied Chemical & Die Corp., New York City.

Smith & Hemenway—Tools. Crescent Tool Co., Jamestown, N. Y.

Snaplok—Furnace Pipe. Reeves Steel & Mfg. Co., Dover, Ohio.

Snapon—Mouldings & Trim. John Lees Div., Serrick Corp., Muncie, Ind.

Snap-Rite—Ducts, Pipe and Fittings. Gray Metal Products Inc. Rochester, N. Y.

Snap-Tite — Damper Regulators, Clips and Tips. M. A. Gerett Corp., Milwaukee.

Sno-Breze—Air Conditioning Units. Palmer Mfg. Corp., Phoenix, Ariz.

Snug-Fit—Coils. Hotstream Heater Co., Cleveland, O.

Softweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Solaraire—Air Conditioning Furnace. St. Louis Furnace Mfg. Co., St. Louis.

Solderprep—Flux for steel. Neilson Chemical Co., Detroit.

Solid Asphalt — Waterproofing. Ford Roofing Products Co., Chicago.

Solid Comfort—May-Fiebeger Co., Newark, Ohio.

Sono-O-Seal—Insulation. General Insulating Products Co., Brooklyn.

Soroco—Chimney Caps and Tops. Southbridge Roofing Co., Southbridge, Mass.

Southaire—Stokers. E. E. Souther Iron Co., St. Louis.

Sovaklor—Protecting Paint Metal. Socony Paint Proiucts Co., New York City.

Sovalex — Metal Protecting Paint. Socony Paint Products Co., New York City.

Spacesaver—Heating Unit. Payne Furnace & Supply Co., Beverly Hills, Cal.

SpecO—Soldering Flux. Pfanstiehl Chemical Co., Waukegan, Ill.

Spedene—Glazing Compound. Glidden Co., Cleveland.

Speed Clips—Spring Steel Fastenings. Tinnerman Products, Inc., Cleveland.

Spee Dee — Coils. Air Controls, Inc., Cleveland, O.

Speed-heat—Furnaces. Marshall Furnace Co., Marshall, Mich.

Speed Nuts—Sheet Metal Nuts. Tinnerman Products, Inc., Cleveland.

Speed-Up—Concrete Waterproofing Cement. Hilo Varnish Corp., Brooklyn.

Sphinx—Blower-Filter Units, Burners, Furnaces. C. L. Bryant Corp., Cleveland, O.

Spinner—Ceiling Ventilators. Milcor Steel Co., Milwaukee.

Spirovane—Ventilating Fans. Western Blower Co., Seattle, Wash.

Sprague—Furnaces. Katelman Foundry & Mfg. Co., Council Bluffs, Ia.

Sprayit—Paint Guns and Humidifiers. Electric Sprayit Co., Sheboygan, Wis.

Spra-Rite—Nozzles. Binks Mfg. Co., Chicago, Ill.

Spraymaker—Humidifiers. Lennox Furnace Co., Marshalltown, Iowa.

Stable-Arc — Arc Welding Electrodes, Arc Welders. Lincoln Electric Co., Cleveland, O.

Stack Heet—Heat Savers. Robert Barclay, Inc., Chicago.

Sta-Gloss—Stainless Sheets. Jessop Steel Co., Washington, Pa.

Stainlend—Electrodes. Arcos Corporation, Philadelphia.

Stainweld — Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Sta-Lock—Prefabricated Ducts and Duct Fittings. Chicago Furnace Supply Co., Chicago.

Stamco—Furnace Pipe, Fittings. Cincinnati Stamping Co., Cincinnati, O.

Stamco—Sheet and Plate Machinery. Streine Tool & Mfg. Co., New Bremen, Ohio.

Standard—Furnaces. Aladdin Heating Corp., Oakland, Cal.

Standard — Furnaces. Farris Furnace Co., Springfield, Ill.

Standard—Furnaces. Home Furnace Co., Holland, Mich.

Standard—Ventilators. Allen Corp., Detroit.

Standard Topton—Furnaces. Klein Stove Co., Philadelphia.

Star—Furnaces. Arcweld Mfg. Co., Inc., Seattle, Wash.

Star—Soldering Furnaces. Burgess Soldering Furnace Co., Columbus, O.

Star—Ventilators. Merchant & Evans Co., Philadelphia, Pa.

Steelcore—Galvanized Steel Shingles. Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Steel-Fin—Heating Coils. New York Blower Co., Chicago.

Steel Mixture—Baffles and Refractories. McLeod & Henry Co., Inc., Troy, N. Y.

Sterling—Beading Machines. F. L. Robertson, Buffalo.

Sterling—Evaporative Coolers and Compressors. Reynolds Mfg. Co., Springfield, Mo.

Steward—Presses and Dies. Ward Machinery Co., Chicago.

Stewart—Furnaces. Fuller-Warren Co., Milwaukee, Wis.

Stic-Tite—Cement Refractory & Insulation Corp., New York City.

Stokabilt—Air Conditioning Stoker Furnaces. American Foundry & Furnace Co., Bloomington, Ill.

Stok-A-Timer—Stoker Controls. Mercoid Corp., Chicago.

Stoker Economy—Stoker Furnaces. International Heater Co., Utica, N. Y.

Stoker Fire—Furnaces. McPherson Furnace & Supply Co., Portland, Ore.

Stoker-Ola—Stokers. Advance Appliance Co., Peoria, Ill.

Stokerator—Domestic Stokers. Northern Steel & Stoker Corp., Peoria, Ill.

Stokerelay—Relays. Minneapolis-Honeywell Regulator Co., Minneapolis.

Stokol—Water Heaters. Schwitzer-Cummins Co., Indianapolis, Ind.

Stokol Hydraulic—Stokers. Schwitzer-Cummins Co., Indianapolis, Ind.

Stokol Mercury — Stokers. Schwitzer-Cummins Co., Indianapolis, Ind.

StormSeal—Roofing Steel. Columbia Steel Co., San Francisco, Cal.

Stormtight—Roof Cement. L. Sonneborn Sons, Inc., New York City.

Stowaway—Attic Furnaces. Lennox Furnace Co., Marshalltown, Ia.

Strate-Edge—Eaves Trough and Gutters. Milcor Steel Co., Milwaukee.

Strato-Liminator—Air Diffusers. Wilster Air Devices Inc. Cleveland.

Streamaire—Air Conditioning Units and Coils. Young Radiator Co., Racine, Wis.

Stream-Flo—Ventilators. The Allen Corporation, Detroit.

Streamline—Furnaces, Aladdin Heating Corp., Oakland, Cal.

Streamline—Ridge Ventilators. H. H. Robertson Co., Pittsburgh.

Streamlined—Furnaces. Sure Comfort Furnace Co., Berwyn, Ill.

Sturdybender—Presses. Cyril Bath & Co., Cleveland.

Sunbeam—Furnaces, Blower-Filters, Oil Burners, Heaters and Humidifiers. American Radiator and Standard Sanitary Corp., Pittsburgh.

Sunbeam-Allerton—Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Bayport—Furnaces. American Rad. & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Arlington—Furnaces. Ameri- Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Chippewa—Furnaces. American Rad. & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Cliffdale — Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Clifton — Furnaces. American Radiator & Stanard Sanitary Corp., Pittsburgh.

Sunbeam-Elwood—Oil Floor Furnaces. American Rad. & Standard San. Corp., Pittsburgh.

Sunbeam-Kenwood — Furnaces, Heaters. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Longwood—Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Mohawk — Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Saginaw—Gas Floor Furnaces. American Rad. & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Saratoga—Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Seneca — Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Shawnee — Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Westmoreland—Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sunbeam-Wyandotte—Furnaces. American Radiator & Standard Sanitary Corp., Pittsburgh.

Sun Fuel-Master—Furnaces and Heaters. J. V. Patten Co., Sycamore, Ill.

Sunglo—Furnaces. Moore Corp., Joliet, Ill.

Sunrise—Gas and Oil Burners. Kais Sunrise Works, Detroit, Mich.

Super—Hangers and Fittings. Royal-Apex Mfg. Corp., Brooklyn, N. Y.

Super—Pneumatic Tools. Wm. H. Keller, Inc., Grand Haven, Mich.

Superair — Air Conditioning Furnaces. St. Louis Furnace Mfg. Co., St. Louis.

Superair — Blower-Filter Units. The Majestic Co., Huntington, Ind.

Super Air Screws — Ventilating Fans. Marathon Electric Mfg. Corp., Wausau, Wis.

Superbrite—Aluminum Paint. Acorn Refining Co., Cleveland.

Superflex—Furnaces, Heaters. Perfection Stove Co., Cleveland.

Superfin—Furnaces. American Fdry. & Furnace Co., Bloomington, Ill.

Super Firma—Gravity Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo.

Superheat—Furnaces. Dallman Supply Co., Sacramento, Cal.

Super-Nickel—Fittings. American Brass Co., Waterbury, Conn.

Super-Quiet—Oil Burners. Green Colonial Furnace Co., Des Moines, Ia.

Super Red Streak—Furnace Cleaners. National Super Service Co., Toledo.

Superior—Furnaces. Pacific Airmax Corporation, Huntington Park, Calif.

Superior—Blowers. American Foundry & Furnace Co., Bloomington, Ill.

Superior — Soldering Furnaces and Torches. P. Wall Mfg. Supply Co., N. S. Pittsburgh.

Superior Everlast—Furnaces. Pacific Airmax Corp., Huntington Park, Calif.

Superlife—Furnace. Excelsior Steel Furnace Co., Chicago.

Super—Plastic Furnace Lining. Walsh Refractories Corp., St. Louis.

Super Red Streak — Furnace Vacuum Cleaners. National Super Service Co., Toledo, O.

Super-Thermo—Refractory. Chicago Fire Brick Co., Chicago.

Super X—Industrial Coating. B. F. Nelson Mfg. Co., Minneapolis.

Super-X—Roofing Nails. Republic Steel Corporation, Cleveland.

Super X—Sheets. Western Cartridge Company, Brass Mill Div., East Alton, Ill.

Supreme—Furnaces, Water Heaters. American Furnace & Foundry Co., Milan, Mich.

Supreme—Furnaces, Heaters. Agricola Furnace Co., Inc., Gadsden, Ala.

Supreme — Furnaces. McPherson Furnace & Supply Co., Portland, Ore.

Suredrane — Roofing. Reeves Steel & Mfg. Co., Dover, Ohio.

Surelok—Furnace Pipe. Reeves Steel & Mfg. Co., Dover, Ohio.

Sureweld—Arc Welding Electrodes. National Cylinder Gas Co., Chicago.

Surfaceol — Waterproofing Compound. Gerard Chemical Co., Elizabeth, N. J.

Surfaceweld—Arc Welding Electrodes. Lincoln Electric Co., Cleveland.

Swedgers — Packam Crimper Company, Mechanicsburg Ohio.

Sylphon—Controls Damper Regulators, Thermostats and Valves. Fulton Sylphon Co., Knoxville, Tenn.

Symentrex—Waterproofing Compounds. A. C. Horn Co., Long Island City.

Synchron—Stoker Controls, Relays, Switches. Industrial Engineering Corp., Terre Haute, Ind.

Synchron "600"—Timing Machines and Motors. Hansen Mfg. Co., Inc., Princeton, Ind.

SyncreTizer—School Room Heaters. John J. Nesbitt, Inc., Philadelphia.

Symonds—Registers. Front Rank Furnace Co., Div., Liberty Foundry Co., St. Louis.

T

tafco—Air Filters. Tuttle Air Filter Co., Inc., Louisville, Ky.

Tag—Controls, Humidistats, Hygrometers, Recorders, Psychrometers, Thermometers, Thermostats and Gas Pressure Regulating Valves. C. J. Tagliabue Mfg. Co., Brooklyn.

Tamanite — Metal Conditioner. Tamms Silica Company, Chicago.

Tamco — Ventilators. Tiffin Eaves Trough Clamp Co., Tiffin, Ohio.

Tampico—Filters. Chicago Filter Co., Joliet Ill.

Tanco—Paint. Thompson & Co., Pittsburgh, Pa.

Taylor—Roofing Ternes. Republic Steel Corporation, Cleveland.

Taylor—Stokers. American Eng. Co., Philadelphia.

Techni-Turn — Duct Turning Vanes. Waterloo Register Co., Waterloo, Ia.

Techni-vane—Duct Turning Vanes. Waterloo Register Co., Waterloo, Ia.

Technotrol—Electric Clock Thermostat. White Mfg. Co., St. Paul, Minn.

Tee Joint—Pipe Fittings and Accessories. Milcor Steel Co., Milwaukee.

Teltru—Psychrometers and Thermometers. E. Vernon Hill, Chicago.

Tem-Clock — Controls. Penn Electric Switch Co., Goshen, Ind.

Temco — Furnaces. Tennessee Enamel Mfg. Co., Nashville, Tenn.

Temlok—Insulation. Armstrong Cork Co., Lancaster, Pa.

Tempered-Aire—Furnaces. Gar Wood Industries, Inc., Detroit, Mich.

Tempryte—Heat Insulating Windows. Truscon Steel Co., Youngstown, O.

Temtrol — Thermostats. Penn Electric Switch Co., Goshen, Ind.

10-Plastic—Caulking Compounds. Quigley Co., Inc., New York City.

Tensulate—Insulation. Tennessee Products Corp., Nashville, Tenn.

Texrope—V-Belts. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Tharoo—Furnace Cement. The Armstrong Company, Detroit, Mich.

"The Pacific"—Furnaces. W. W. Rosebraugh Co., Salem, Ore.

Therma-Flo—Circulating Heaters. Utility Fan Corp., Los Angeles.

Thermalfuel — Furnaces. Beck Engineering Combustion Kompany, St. Louis.

Thermascrete #20—Refractories. Munn and Steele, Inc., Newark, N. J.

Thermidaire — Air Conditioning Units, Blowers, Coils, Furnaces, Louvres & Shutters. E. K. Campbell Heating Co., Kansas City, Mo.

Thermix—Blow Pipe Collectors. Prat-Daniel Corporation, Port Chester, N. Y.

Thermo—Furnaces. American Furnace Co., St. Louis.

Thermo—Gas Soldering Furnace. Ward Machinery Co., Chicago.

Thermo-Draulic—Damper Motors and Regulators. Perfex Corporation, Milwaukee.

Thermo-Drip — Humidifier. Automatic Humidifier Co., Cedar Falls, Ia.

Thermo-Flex—Registers. Middleton Mfg. & Sales Co., Minneapolis, Minn.

Thermogas—Furnaces. Beck Engineering Combustion Kompany, St. Louis, Mo.

Thermogrip—Soldering Coppers. Ideal Commutator Dresser Co., Sycamore, Ill.

Thermohumidigraph—Humidity Recorders. Bristol Co., Waterbury, Conn.

Thermoil—Furnaces. Beck Engineering Combustion Kompany, St. Louis.

Thermolator—Heaters. Pacific Airmax Corporation, Huntington Park, Calif.

Thermopane—Windows. Libbey-Owens-Ford Glass Co., Toledo, Ohio.

Thermopaste—Plastic Fire Brick. Chicago Fire Brick Co., Chicago, Ill.

Thermopilot—Controls. General Controls Co., Glendale, Cal.

Thermotite—Insulation. Coast Insulating Corp., Los Angeles.

Thin-Man—Registers. Register & Grille Mfg. Co., Inc., Brooklyn.

Thor—Spray Paint Guns. Binks Mfg. Co., Chicago.

Thor—Electric Buffers, Nibblers and Shears. Independent Pneumatic Tool Co., Chicago.

Thor Drill Champion — Electric Drills. Independent Pneumatic Tool Co., Chicago.

3000—Refractories. Refractory & Insulation Corporation, New York City.

370 Special — Paints. Thompson & Co., Pittsburgh, Pa.

Threplex — Flashing. Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

Thrift—Time Switches. Tork Clock Co., Inc., Mt. Vernon, N. Y.

Throway—Steel Wool Filters. American Air Filter Co., Inc., Louisville, Ky.

Tik Wheat—Pipe Covering Paste. Clark Stek-O Corp., Rochester, N. Y.

Tillery's—Furnace Clock. Little Janitor Furnace Clock Co.,. New York City.

Timercoid—Time Clock. Mercoid Corp., Chicago, Ill.

Timerelay—Relays. Minneapolis-Honeywell Regulator Co., Minneapolis.

Time-Saver—Damper Quadrants. Goese Mfg. Co., Milwaukee.

Timetrol—Switches. Penn Electric Switch Co., Goshen, Ind.

Tin Loy — Tinning Compounds. Eagle-Picher Lead Co., Cincinnati, O.

Tinol—Compounds and Soldering Flux. American Solder & Flux Co., Philadelphia, Pa.

Tite—Caulking Compounds. J. H. Krehbiel Co., Chicago.

Titelock—Fittings and Accessories for Conductor, Eaves Trough and Gutter, Furnace Pipe, Copper Roofing. Milcor Steel Co., Milwaukee.

TiteSeal—Caulking Compounds. Radiator Specialty Co., Charlotte, N. C.

Tobin Bronze—Plates and Welding Rod. American Brass Co., Waterbury, Conn.

Tomb Brand—Insulation. Barrett Div., Allied Chemical & Die Corp., New York City.

Toncan Iron—Roofing, Sheets. Republic Steel Corp., Cleveland, O.

Toolweld—Arc Welding Electrodes. Lincoln Electric Co., Clevelond, O.

Top-Notch — Furnaces. Excelsior Steel Furnace Co., Chicago.

Toridaire—Furnaces. Fraser and Johnston Co., San Francisco.

Torid-Cast—Refractories. Walsh Refractories Corp., St. Louis.

Tornado — Furnace Vacuum Cleaners. Breuer Electric Mfg. Co., Chicago.

Torpedo—Skylights. Milcor Steel Co., Milwaukee, Wis.

Torrid—Soldering Furnaces and Torches. Geo. W. Diener Mfg. Co., Chicago.

Torrid Zone—Furnaces. Lennox Furnace Co., Marshalltown, Ia.

Townley—Ventilators. A-J Mfg. Co., Kansas City, Mo.

Transite—Pipe and Fittings. Johns-Manville, New York City.

Transweld — Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.

Trimtherm—Thermostats. General Controls Co., Glendale Cal.

Triple A—Paints, Enamels and Lacquers. Quigley Co. Inc. New York City.

Triple Drain—Channel Roofing. Republic Steel Corp., Cleveland, O.

Triple Lock—Roofing Nails. The Deniston Co., Chicago.

Triple-Mix — Furnace Cement. J. H. Krehbiel Co. Chicago.

Triplex—Furnaces. Home Furnace Co., Holland, Mich.

Tripl-ife—Furnaces. Williamson Heater Co. Cincinnati, O.

Tripltrol—Controls. White Mfg. Co., St. Paul, Minn.

Triumph—Furnaces. Joseph Capps, Inc., South Gate, Cal.

Trojan—Furnaces and Stokers. Auburn Burner Co., Auburn, Ind.

Tropic Breeze—Furnaces. Dalzen Manufacturing Co., Detroit.

Tropico—Humidifiers. Roberts-Hamilton Co., Minneapolis, Minn.

Truflex—Thermostatic Bi-Metals. General Plate Div. Metals & Controls Corp., Attleboro, Mass.

Tuffernell—Paint. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Trussteel — Registers. United States Register Co., Battle Creek, Mich.

Tulox—Plastic Coils and Tubing. Extruded Plastics, Inc., Norwalk, Conn.

Turbo—Air Washers. Bayley Blower Company, Milwaukee.

Turbo-Lift—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.

Turbovane—Blowers. B. F. Sturtevant Co., Boston.

Turret—Water Circulating Pumps. Yeomans Bros. Co., Chicago.

Twin Baffle—Burners. Lochinvar Products, Dearborn, Mich.

Twin Contact—Controls, Relays, Thermostats. Perfex Corporation, Milwaukee, Wis.

Twin Control — Oil Burners. Hueller Mfg. Co., Inc., H. J. Brooklyn, N. Y.

Twin-Fyre—Oil Burner. Aldrich Co., Wyoming, Ill.

Twin Zephyr—Humidifier. Maid-O'-Mist, Inc., Chicago, Ill.

Tygon—Metal Protecting Paint. U. S. Stoneware Co., Akron, Ohio.

Tytecote—Reflective Blanket Insulation. Specialty Converters, Inc., East Braintree, Mass.

U

U.S.—Pipe Fittings, Grilles, and Registers. United States Register Co., Battle Creek, Mich.

USG—Built-Up Roofing and Roof Cement and Paint. United States Gypsum Co., Chicago, Ill.

U.S.S.—Roofing Sheets. Carnegie-Illinois Steel Corp., Pitsburgh, Pa.

U.S.S. Carilloy — Alloy Plates. Carnegie-Illinois Steel Corp., Pittsburgh.

U. S. S. Columbia—Roofing, Sheets. Columbia Steel Co., San Francisco.

U.S.S. Stormseal—Steel Roofing. Carnegie-Illinois Steel Corp., Pittsburgh.

U-Loy—Sheets. Republic Steel Corp., Cleveland, O.

UMCO—Furnaces. Union Manufacturing Co., Boyertown, Pa.

Unicool — Air Conditioning Units and Washers. Betz Air Conditioning Corp., Kansas City, Mo.

Unifil—Insulation. Robinson Insulation Co., Great Falls, Mont.

Uni-Fin—Grilles and Warm Air Registers. Barber-Colman Co., Rockford, Ill.

Uniflex—Roofing Paint. Acorn Refining Co., Cleveland.

Uni-flo—Duct Turning Vanes, Grilles and Registers. Barber-Colman Company, Rockford, Ill.

Unloy—Stainless Steel Sheets. Universal-Cyclops Steel Corp., Bridgeville, Pa.

Unipack—Blowers. American Machine Products Co., Marshalltown, Iowa.

Unique—Air Conditioning Furnace. Excelsior Steel Furnace Co., Chicago.

Unique—Gas Heaters. Palmer Mfg. Corp., Phoenix, Ariz.

Unishear — Portable Electric Shears. Stanley Electric Tool Div., The Stanley Works, New Britain, Conn.

Unisorb—Bases and Pads and Duct Insulation. Felters Co., Inc., Boston, Mass.

Unitaire — Air Conditioning Units for Stores. Westinghouse Electric & Mfg. Co., East Springfield, Mass.

Uni-Therm—Air Cond. Furnace. Utility Fan Corp., Los Angeles.

Universal—Air Filters. Hugo Mfg. Co., Duluth, Minn.

Universal — Angle Benders. Hossfeld Mfg. Co., Winona, Minn.

Universal—Bases. B. T. Butterworth, Jr., New Canaan, Conn.

Universal—Dial Damper. Parker-Kalon Corp., New York, N. Y.

Unxld—Damper Quadrants. Parker-Kalon Corp., New York, N. Y.

Upson—Rivets, Bolts. Republic Steel Corp., Cleveland, O.

usAIRco—Air Conditioning Units, Blowers and Blower-Filter Units, Fans, Grilles, Washers and Blower Wheels. U. S. Air Conditioning Corp., Minneapolis.

Utilus—Kitchen Exhaust and Ventilating Fans. W. F. Hirschman Co., Inc., Buffalo, N. Y.

V

Vacu-Draft—Forced Draft Blowers. Muncie Gear Works, Inc., Muncie, Ind.

Valcalox — Damper Regulators. Young Regulator Co., Cleveland.

Vale—Pumps. W. W. Grainger, Inc., Chicago.

Valley Forge—Cement. Ehret Magnesia Mfg. Co., Valley Forge, Pa.

Vapoglas — Humidifier Evaporating Plates. Skuttle Mfg. Co., Detroit.

Vaporator—Humidifiers. Rudy Furnace Co., Dowagiac, Mich.

Vedoc—Enamels. Ferro Enamel Corp., Cleveland.

Vee-Clip — Stainless Roof Fastening Clips. National Stainless Clip Corporation, New York City.

Veelos—Adjustable V-Belts. Manheim Mfg. & Belting Co., Manheim, Pa.

Velometer—Anemometers. Illinois Testing Laboratories, Inc., Chicago, Ill.

Venetian—Roofing Paint. Clinton Metallic Paint Co., Clinton, N. Y.

Ventil-aire — Window Ventilator-Filter Units. Fairbanks, Morse & Co., Chicago.

Vent-Rite—Solenoid Valves. Anderson Products, Inc., Cambridge, Mass.

Venture—Fans, Ventilators. American Blower Corp., Detroit, Mich.

Venturi-Flo—Air Diffusers, Ceiling Ventilators, Duct Turning Vanes. Barber-Colman Company, Rockford, Ill.

Veri-Best — Soldering Furnaces and Torches. Van Praag Sales, New York City.

Vernois—Furnaces and Heaters. Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.

Vibracork—Bases. Armstrong Cork Co., Lancaster, Pa.

Vibro-Bars—Vibration Isolating Bases. Korfund Co., Inc., Long Island City.

Vibro-Dampers — Vibration Isolating Bases. Korfund Co., Inc., Long Island City.

Vibro-Isolator — Vibration Isolating Bases. Korfund Co., Inc., Long Island City.

Victor—Blower-Filter Units, Furnaces, Humidifiers, Oil Burners, Stokers, Hall-Neal Furnace Co., Indianapolis, Ind.
Victoraire—Winter Air Conditioners. Hall-Neal Furnace Co., Indianapolis, Ind.
Victorgas—Gas Units. Hall-Neal Furnace Co., Indianapolis, Ind.
Victoria — Venetian Blinds. Bostwick-Goodell Co., Norwalk, Ohio.
Victoroil—Air Conditioning Furnaces. Hall-Neal Furnace Co., Indianapolis, Ind.
Victorstoke — Stoker Units. Hall-Neal Furnace Co., Indianapolis, Ind.
Victory—Oil Burners. Caloroil Burner Corp., Hartford, Conn.
Victory—Registers. Register & Grille Mfg. Co., Inc., Brooklyn.
Vigoraire—Furnaces. Marshall Furnace Co., Marshall, Mich.
Visaflame—Oil Burner Controls. Mercoid Corp., Chicago, Ill.
Visi-Draft—Draft Gauge. F. W. Dwyer Mfg. Co., Chicago.
Vitalaire—Portable Room Cooler. Ice Cooling Appliance Corp., Morrison, Ill.
Vitra-Carlite — Enamels and Lacquers. Hilo Varnish Corp., Brooklyn.
Vitriset—Furnace Cement. U. S. Stoneware Co., Akron, Ohio.
Vitroliner—Vent and Flue Pipe and Fittings. Condensation Engineering Corp., Chicago.
Volcano—Chimney Caps and Tops, Ventilators. Iwan Brothers, South Bend, Ind.
Vortex—Furnace Vacuum Cleaners. B. F. Sturtevant Co., Hyde Park, Boston, Mass.
Vortex—Spray Nozzles. Phillips Cooling Tower Co., Inc., New York City.
Vulcan—Stokers. Susquehanna Engineering Co., Bloomsburg, Pa.
Vulcanite—Roofing, and Roofing Cement. Certain-teed Products Corp., New York City.
Vulcatex—Caulking and Glazing Compounds. A. C. Horn Co., Long Island City, N. Y.
Vulco—V-type Belts and Pulleys. Gates Rubber Co., Denver, Colo.

W

WAW—Tools. W. A. Whitney Mfg. Co., Rockford, Ill.
Warco—Refractories. Walsh Refractories Corp., St. Louis, Mo.
Warco Moisturator—Humidifiers. W. A. Russell & Co., Bridgeport, Conn.
Ward Zephyr—Attic Fans. Edgar T. Ward Co., Inc., River Forest, Ill.
Warrior—Furnaces. Dowagiac Steel Furnace Co., Dowagiac, Mich.
Watco—Spray Nozzles. Water Cooling Corp., New York City.
Waterbase—Furnaces. Farris Furnace Co., Springfield, Ill.
Water-Boy—Humidifier Valves. Maid-O'-Mist, Inc., Chicago, Ill.
Waterbury—Air Conditioners, Oil Burners, Cabinets, Casings, Ducts and Fittings, Pipe, Pipe Fittings and Accessories, Furnaces and Heaters. Waterman-Waterbury Co., Minneapolis, Minn.
Water-RAY-trola — Oil-fired Water Heater. Ray Oil Burner Co., San Francisco.
Waterseal—Cement. Thompson & Co., Pittsburgh, Pa.
Watertender—Humidifier Valve. Skuttle Mfg. Co., Detroit.
Wearweld — Arc Welding Electrodes. Lincoln Electric Co., Cleveland, O.
Wearwell — Paint. Thompson & Co., Pittsburgh, Pa.
Weathermaker—Air Conditioning Units. Carrier Corp., Syracuse, N. Y.
Weathermaster—Air Conditioning Units, Boiler Type. Carrier Corp., Syracuse, N. Y.
Weather Master—Stokers. Kol-Master Corporation, Oregon, Ill.
Weatherwood—Insulation. United States Gypsum Co., Chicago, Ill.
Webster—Spray Nozzles and Air Washers. W. J. Strandwitz & Co., Inc., Camden, N. J.
Wedgbelt—Belts and Pulleys. American Pulley Co., Philadelphia, Pa.
Weir—Air Conditioning Furnaces, Gravity Furnaces, Heaters, Humidifiers, Stokers. Meyer Furnace Co., Peoria, Ill.
Weircoloy—Copper Bearing Galvanized Sheets. Weirton Steel Co., Weirton, W. Va.
Weirite—Tin Plate. Weirton Steel Co., Weirton, W. Va.
Weisco—Skylight Lifts. H. Weiss & Co., New York, N. Y.
Weld-Craft—Welders. Allied Weld-Craft, Inc., Indianapolis, Ind.
Weldon—Furnaces. McPherson Furnace & Supply Co., Portland, Ore.
Weld-o-trol—Spot Welders. Westinghouse Electric & Mfg. Co., East Pittsburgh.
Weld-O-Tron—Arc Welders. Allis-Chalmers Mfg. Co., Milwaukee.
Wellsville Savage—Fire Brick. Chicago Fire Brick Co., Chicago, Ill.
Wesco — Blower Filters. Northwest Stove & Furnace Works, Inc., Portland, Ore.
Wesco Diamond—Furnaces. Northwest Stove & Furnace Works, Portland, Ore.
Wesco Duplex—Utility Room Furnaces. Northwest Stove & Furnace Works, Portland, Ore.
Wesco—Furnaces. John Westwick & Son, Inc., Galena, Ill.
Wesco—Furnaces. Woods-Evertz Stove Co., Springfield, Mo.
West Wind—Window Fans. American Metal Products Co., Fort Worth, Tex.
Western Fan — Roof Fan Ventilators. Western Engineering & Mfg. Co., Los Angeles.
Western King—Furnaces. Independence Stove & Furnace Co., Independence, Mo.
Western Turbine—Gravity Roof Ventilators. Western Engineering & Mfg. Co., Los Angeles.
Whirlator—Oil Burners. Norge Heating & Conditioning Div., Borg-Warner Corp., Detroit, Mich.
Whirljet—Spray Nozzles. Spraying Systems Co., Chicago.
Whiting—Stokers. Eddy Stoker Corporation, Chicago.
Whitney-JENSEN — Angle Benders, Brakes, Elbow and Pittsburgh Lock Forming Machines, Punches, Shears and Tools. Whitney Metal Tool Co., Rockford, Ill.
Whiz—Electric Drills. Paramount Products Co., New York City.
Wiechert—Furnaces, Heaters. St. Clair Foundry Corp., Centralia, Ill.
Wildergloss—Smoke Pipe and Fittings. Wilder Mfg. Co., Niles, Ohio.
Wilson—Arc Welders. Air Reduction Sales Company, New York City.
Wilson—Furnace Brushes. Worcester Brush & Scraper Co., Worcester, Mass.
Winair—Fans. W. F. Hirschman Co., Inc., Buffalo, N. Y.
Wind Electric—Roof Ventilators. W. F. Hirschman Co., Inc., Buffalo, N. Y.
Wind-O-Fan, Jr. — Window Ventilating Fan. Chelsea Fan & Blower Co., Inc., Irvington, N. J.
Wind-O-Vane Jr.—Kitchen Exhaust Fans. B. F. Sturtevant Co., Hyde Park, Mass.
Windowstat—Condensation Control. Julien P. Friez & Sons, Towson, Md.
Winkler—Fans and Stokers. U. S. Machine Corporation, Lebanon, Ind.
Winner—Gravity Registers. Auer Register Co., Cleveland, O.
Winter-Chaser—Air Conditioning Units, Furnaces, Heaters. Campbell Heating Co., Des Moines, Ia.
Winter King — Furnaces. McPherson Furnace & Supply Co., Portland, Ore.
Wire-Klad—Filters. Staynew Filter Corporation, Rochester, N. Y.
Wissco—Grilles and Gas Welding Rod. Wickwire Spencer Steel Co., New York City.
Wizard—Furnaces. Agricola Furnace Co., Inc., Gadsden, Ala.
Wolfe—Angle Meter, Circle Meter, Divizor, Protractor. Interstate Sales Co., New York City.
Wolverine—Fans, Blades. Belanger Fan & Blower Co., Detroit.
Wolverine—Furnaces. Marshall Furnace Co., Marshall, Mich.
Woolfelt—Duct Insulation. Norristown Magnesia & Asbestos Co., Norristown, Pa.

X

XL—Metal Windows. Herrmann & Grace Co., Brooklyn, N. Y.
X-L-All—Coils, Furnaces. Deshler Foundry & Machine Works, Deshler, O.
Xit—Ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.
X-Pandoseal—Transparent Waterproofing. X-Pando Corp., Long Island City.

Y

Yager's—Flux. Alex R. Benson Co., Inc., Hudson, N. Y.
Yankee—Damper Clips and Tips. Howes-Woods Company, Charlestown, Boston.
YarWay—Nozzles. Yarnall-Waring Co., Philadelphia.
Yearound—Air Conditioning Units. Conditionaire Unit Co., Chicago.
Yorkaire Conditioners—Air Conditioning Units. York Ice Machinery Corp., York, Pa.
Yorkaire Heat—Furnaces. York Ice Machinery Corp., York, Pa.
York-Heat—Air Conditioning Units. York Oil Burner Co., Inc., York, Pa.
YouBert—Collectors and Blow Pipe Fittings. Young & Bertke Co., Cincinnati.

Z

Zeph-Air—Gas Furnace. XXth Century Heating & Ventilating Co., Akron, Ohio.
Zephaire—Air Conditioning Units, Window Fans. American Metal Products Co., Fort Worth, Tex.
Zeph-Oil-Ator—Air Conditioning Furnaces. Century Engineering Corp., Cedar Rapids, Ia.
Zephyr—A. C. Stoker Furnace. Premier Furnace Co., Dowagiac, Mich.
Zephryplane—Sander. Skilsaw, Inc., Chicago.
Zero—Furnace and Insulating Cement and Refractories. Standard Fuel Engineering Co., Detroit, Mich.
Zilloy—Zinc Roofing. New Jersey Zinc Co., New York City.
Zim—Filters. R. F. Zimmerman, Cincinnati, Ohio.
Zinc Chromate Primer—Metal Protecting Paint. Hilo Varnish Corp., Brooklyn.
Zincgrip—Steel Sheets. American Rolling Mill Co., Middletown, O.
Zincoat—Sheets. Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
Zoneair—Furnaces. Payne Furnace & Supply Co., Inc., Beverly Hills, Cal.
Zonolite—Cement, Combustion Chambers, Insulation and Refractories. Universal Zonolite Insulation Co., Chicago, and Munn and Steel, Inc., Newark, N. J.
Zonolite—Insulation. Robinson Insulation Co., Great Falls, Mont.
Z-Bo King—Furnaces. Oakland Foundry Co., Belleville, Ill.
Zura — Roofing Paint. L. Sonneborn Sons, Inc., New York City.

Section of

American Artisan

1943 DIRECTORY OF WARM AIR HEATING, RESIDENTIAL AIR CONDITIONING AND SHEET METAL PRODUCTS

[Section 3—MANUFACTURERS' ADDRESSES]

A

A-C Mfg. Co., Inc., 417 Sherman Ave., Pontiac, Ill.
A-J Manufacturing Co., 2119 Washington St., Kansas City, Mo.
Abbott Mfg. Co., Box 150, Painesville, O.
Acadia Synthetic Products Div., Western Felt Works, 4115 Ogden Ave., Chicago.
•Accurate Mfg. Works, 2336-38 Milwaukee Ave., Chicago, Ill.
Accurate Metal Weather Strip Co., 216 E. 26th St., New York City.
Acer & Whedon, Inc., Commercial St., Medina, N. Y.
Ackermann Manufacturing Company, Wheeling, W. Va.
Acme Asbestos Covering & Flooring Co., 222 Elizabeth St., Chicago, Ill.
•Acme Electric Welder Co., 2618 Fruitland Rd., Los Angeles.
Acme Oil Burner Co., Inc., 210 Third Ave., S. W., Cedar Rapids, Ia.
Acme Refining Co., W. 56th & W&LE Ry., Cleveland, O.
Acme Tin Plate & Roofing Supply Co., 3rd & Westmoreland Sts., Philadelphia, Pa.
Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit.
Acorn Refining Co., 8001 Franklin Blvd., Cleveland, Ohio.
•Adams Co., The, East 4th St., Dubuque, Ia.
Adams Mattress Factory, Fort Worth, Texas.
Adelta Manufacturing Co., Ellsworth St. at 21st, Philadelphia.
Adjustable Bearing Plate Co., 11 Rutger St., St. Louis, Mo.
Advance Aluminum Castings Corp., 2742 W. 36th Pl., Chicago, Ill.
Advance Appliance Co., Inc., 808-810 S. Washington St., Peoria, Ill.
Advance Electric Co., 1260 W. 2nd St., Los Angeles, Cal.
Advance Fan & Blower Co., 3428 Bagley, Detroit, Mich.
Advance Insulating Co., 714 Magee Bldg., Pittsburgh, Pa.
Advanced Refrigerating Systems Co., 33rd & Arch Sts., Philadelphia.
Aeolus Dickinson, 3320 S. Artesian Ave., Chicago, Ill.
Aerofin Corp., 410 S. Geddes St., Syracuse, N. Y.
Aeroil Burner Co., Inc., Park Ave. at 57th St., West New York, N. J.
Aerovent Fan Co., 710 E. Ash St., Piqua, O.
Agnew Electric Co., Milford, Mich.
Agricola Furnace Co., Inc., North 12th St., Gadsden, Ala.
Ahlberg Bearing Co., 3025 W. 47th St., Chicago, Ill.
Air Conditioning Equip. Co., P. O. Box 1123, Minneapolis.
Air Conditioning Products Co., 1230 Eighteenth St., Detroit.
Air Conditioning and Refrigeration Div., Worthington Pump & Machinery Corp., Harrison, N. J.
Air Conditioning & Stokers, Inc., 1610 Tower Grove Ave., St. Louis.
•Air Control Products, Inc., Coopersville, Mich.
Air Controls, Inc., 2310 E. Superior Ave., Cleveland.
Air Devices, Inc., 17 E. 42nd St., New York City.
Airecon Industries Incorporated, 2648 Botsford Ave., Detroit.
Air Filter Engineering Co., 2236 S. Wabash Ave., Chicago.
Aire-Foile Fan & Blower Co., 4737 W. Vernor Highway, Detroit, Mich.
AireOzone Corporation, 3240 50th, Cicero, Illinois.
Airgard Manufacturing Co., 609 N. La Salle St., Chicago, Ill.
Airmaster Corp., 4317 Ravenswood Ave., Chicago.
Air-Maze Corp., 5200 Harvard Ave., Cleveland, O.
Air-O-Cell Industries, Inc., 11616 Cloverdale Ave., Detroit.
Airo-Fin Grille Co., 19159 John R. St., Detroit.
Air-O-Line Co., The, 2118 Griffin St., Dallas, Tex.
Airox Company, 305 E. 46th St., New York City.
Air Reduction Sales Co., 60 E. 42nd St., New York City.
Air & Refrigeration Corp., 475 Fifth Ave., New York City.
Air Stream Filter Corp., 2100 Washington Ave., St. Louis.
Airtemp Div. Chrysler Corp., 1119 Leo St., Dayton, Ohio.
•Airtherm Mfg. Co., 711 S. Spring Ave., St. Louis.
Airwasher Corporation, 1122 N. Washington Ave., Lansing, Mich.
Ajax Building Bracket Co., 1551 Rydal-Mount Rd., Cleveland Heights, O.
Ajax Flexible Coupling Co., Westfield, N. Y.
Aladdin Heating Corp., 2222 San Pablo Ave., Oakland, Cal.
Albert Lea Foundry, 902-910 Marshall, Albert Lea, Minn.
Albright Equipment Co., 100 Station St., Johnstown, Pa.
Alco Manufacturing Co., 2619 Milam St., Houston, Tex.
Alco Valve Co., 2628 Big Bend Blvd., St. Louis, Mo.
Alden Manufacturing Co., Painesville, Ohio.
Aldrich Co., Wyoming, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Alfol Insulation Co., Inc., 155 E. 44th St., New York City.
Allegheny Ludlum Steel Corp., Oliver Bldg. (22), Pittsburgh.
Allen Billmyre Corporation, 431 Fayette Ave., Mamaroneck, N. Y.
Allen-Bradley Co., 1335 S. First St., Milwaukee, Wis.
Allen, Inc., Charles I., Pequabuck, Conn.
•Allen Co., Inc., L. B., 6702 Bryn Mawr Ave., Chicago, Ill.
•Allen Corp., 9752 Erwin, Detroit, Mich.
Allied Heating & Air Conditioning Co., 14807 Condon Ave., Lawndale, Cal.
Allied Weld-Craft, Inc., 401 W. South St., Indianapolis, Ind.
Allington & Curtis Mfg. Co., 1500 Holland Ave., Saginaw, Mich.
Allis-Chalmers Manufacturing Company, Milwaukee.
Allis Co., Louis, 427 E. Stewart St., Milwaukee, Wis.
Allmetal Weatherstrip Co., 229 W. Illinois St., Chicago, Ill.
Allred Manufacturing Company, Inc., 2154 N. Sherman Dr., Indianapolis, Ind.
All States Roofers Equipment & Material Co., 2107 W. Lake St., Chicago, Ill.
Alpha Metal & Rolling Mills, Inc., 363 Hudson Ave., Brooklyn, N. Y.
•Alphil Spot Welding Co., 431 W. Broadway, New York City.
Alton Mineral Wool Insulation Co., P. O. Box 268, Alton, Ill.
Aluminum Co. of America, 801 Gulf Bldg., Pittsburgh.
Aluminum Goods Mfg. Co., Manitowoc, Wis.
American Agile Corporation, 5806 Hough Ave., Cleveland.
American Air Conditioning Co., 2331 Thirteenth Ave., Minneapolis.
American Air Conditioning Co., Boulevard Bldg., Detroit
American Air Conditioning Corp., P. O. Box 29, Sebastopol, Cal.
•**American Air Filter Co., Inc., 113 Central Ave., Louisville, Ky.**
American Blower Corp., Box 58, Roosevelt Park Annex, Detroit.
•**American Brass Co., 414 Meadow St., Waterbury, Conn.**
American Cabinet Hardware Corp., Rockford, Ill.
American Chain Division, American Chain & Cable Co., Inc., York, Pa.
American Chemical Paint Co., Brookside Ave., Ambler, Pa.
American Coal Burner Co., 18 E. Erie St., Chicago, Ill.
American Coils, Inc., 25-27 Lexington St., Newark, N. J.
American Coolair Corp., 3604 Mayflower St., Jacksonville, Fla.
American Cooling Tower Co., 2710 McGee St., Kansas City, Mo.
American Emblem Co., Inc., P. O. Box 116M, Utica, N. Y.
American Engineering Co., Aramingo Ave. & Cumberland St., Philadelphia.
American Excelsior Corp., 100-20 N. Halsted St., Chicago.
American Flange & Mfg. Co., Inc., 1901 RCA Bldg., Radio City, New York City.
American Flexible Coupling Co., 1801 Pittsburgh Ave., Erie, Pa.
American Foundry Equipment Co., 621 Byrkit St., Mishawaka, Ind.
American Foundry & Furnace Co., Washington at McClun St., Bloomington, Ill.
American Furnace Co., 2719-31 Delmar Blvd., St. Louis, Mo.
American Furnace & Foundry Co., Drawer E, Milan, Mich.
American Furnace Lighter Sales Company, 4541 Delmar Blvd., St. Louis.
American Gas Furnace Co., 140 Spring St., Elizabeth, N. J.
American Hair & Felt Co., 222 N. Bank Dr., Chicago, Ill.
American Instrument Co., 8010 Georgia Ave., Silver Spring, Md.
American Insulator Corp., New Freedom, Pa.

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American-Larson Ventilating Co., 1004 Keystone Bank Bldg., Pittsburgh, Pa.
American Machine Products Co., 207-11 Market St., Marshalltown, Ia.
American-Marietta Company, 43 E. Ohio St., Chicago.
American-Marsh Pumps, Inc., 60 Capital Ave., N. E., Battle Creek, Mich.
American Metal Hose Branch, American Brass Co., 67 Jewelry St., Waterbury, Conn.
American Metal Products Co., 730 Hudgins St., Fort Worth, Tex.
American Metal Weather Strip Co., 144 N. Division Ave., Grand Rapids, Mich.
American Moistening Co., 260 W. Exchange St., Providence, R. I.
American Nickeloid Co., 1505 Second St., Peru, Ill.
American Pulley Co., 4200 Wissahickon Ave., Philadelphia.
American Radiator & Standard Sanitary Corp., P. O. Box 1226, Pittsburgh.
●American Rolling Mill Co., 702 Curtis St., Middletown, O.
American Schaeffer & Budenberg Instrument Div., Manning, Maxwell & Moore, Inc., 11 Elias St., Bridgeport, Conn.
American Screw Co., 21 Stevens St., Providence, R. I.
American Sheet Metal Works, 331 N. Alexander, New Orleans, La.
American Smelting and Refining Co., 120 Broadway, New York City.
American Solder & Flux Co., 2152 East Norris St., Philadelphia.
American Standard Gas Products Co., 11720 Cloverdale Ave., Detroit.
American Steel Band Co., Bowman Bldg., Pittsburgh.
American Steel & Wire Co., 614 Superior Ave., N. W., Cleveland.
American Stove Company, Lorain Div., 1200 Long Ave., Lorain, O.
American Warming & Ventilating Co., 1017 Summit St., Toledo, O.
American Wood Register Co., Novelty & Walnut Sts., Plymouth, Ind.
American Zinc Products Co., Greencastle, Ind.
Ames Co., W. R., 150 Hooper St., San Francisco, Cal.
Amirton Co., 27 Pearl St., New York City.
Anchor Post Fence Company, Heating Div., Eastern Ave. & Kane St., Baltimore, Md.
Anchor Stove and Range Co., Div. Stratton & Terstegge Co., Third & Culbertson, New Albany, Ind.
Andersen Corporation, Bayport, Minn.
Anderson Mfg. Co., 511 3rd, Des Moines, Ia.
Anderson Products, Inc., 17 Tudor St., Cambridge, Mass.
Andes Range & Furnace Corp., 117 Evans St., Geneva, N. Y.
Andrews Heating Company, 117-199 Main St., S. E., Minneapolis.
Andrews Lead Co., Inc., 30-48 Greenpoint Ave., Long Island City, N. Y.
Anemostat Corporation of America, 10 East 39th St., New York City.
Angell Nail & Chaplet Co., 4580 E. 71st St., Cleveland, O.
Angier Corporation, Framingham, Mass.
Annis Air Filters, 1515 Gardena Ave., Glendale, Cal.
Anti-Corrosive Metal Products Co., Inc., P. O. Box 788, Albany, N. Y.
Antigo Building Supply Co., Antigo, Wis.
Apfel & Company, 928 S. Ninth St., Hamilton, Ohio.
Apollo Metal Works, 66th Pl. & So. Oak Park Ave., Clearing Sta., Chicago.
Apollo Steel Co., 609-617 Warren Ave., Apollo, Pa.
April Showers Company, 4126 Eighth St., N. W., Washington, D. C.
Aqua-Mist Company, 426 Jefferson St., Topeka, Kansas.
Arcos Corporation, 401 N. Broad St., Philadelphia.
Arcweld Mfg. Co., Inc., 3469 Third Ave. W., Seattle, Wash.
Arex Co., 333 N. Michigan Ave., Chicago.
Armstrong-Blum Mfg. Co., 5700 Bloomingdale Rd., Chicago.
Armstrong Co., 241 S. Post St., Detroit, Mich.
Armstrong Cork Co., 992 Concord St., Lancaster, Pa.
Armstrong Furnace Co., 1649 Olentangy River Rd., Columbus, O.
Arrow-Hart & Hegeman Elect. Co., 103 Hawthorn St., Hartford, Conn.
Asphalt Products Co., Inc., Eastwood Sta., Syracuse, N. Y.
Associated Heater Parts Co., 2807 S. LaSalle St., Chicago.
Associated Southern Industries, 1161 Union Ave., Memphis, Tenn.
Atcheson Glass Co., T. J., 955 Main St., Buffalo, N. Y.
Athey Co., 6035 W. 65th St., Chicago.
Atkins and Co., E. C., 402 S. Illinois St., Indianapolis, Ind.
Atlantic Metal Hose Co, Inc., 123 W. 64th St., New York City.
Atlantic Steel Company, P. O. Box 1714, Atlanta, Ga.
Atlas Bolt & Screw Co., 1130 Ivanhoe Rd., Cleveland, O.
Atlas Heating & Ventilating Co., Ltd., 557 4th St., San Francisco, Cal.
Atlas Machine & Tool Co., 1721 N. E. Alberta St., Portland, Ore.
Atlas Valve Co., 282 South St., Newark, N. J.
Auburn Burner Company, Lock Box 269, Auburn, Ind.
Auburn Foundry, Inc., Stoker Div., Lock Box 471, Auburn, Ind.
Audubon Wire Cloth Corp., Allen St. & Castor Ave., Philadelphia.
●Auer Register Co., 3608 Payne Ave., Cleveland, O.
Au-Temp-Co Corp., 33 W. 60th St., New York City.
Autoforce Ventilating System, 244 Washington St., Boston.
Autogas Company, 2258 Diversey Ave., Chicago.
Auto-Heat Corporation, 311 W. 66th St., New York City.
Automatic Burner Corp., 1823 Carroll Ave., Chicago, Ill.
Automatic Gasflux Mfg. Co., 198 Wayne St., Mansfield, Ohio.
●Automatic Humidifier Co., 19th & Main Sts., Cedar Falls, Ia.
●Automatic Products Co., 2450 N. 32nd St., Milwaukee, Wis.
Automatic Pump & Softener Corp., Rockford, Ill.
Automatic Stoker Corp., Indianapolis, Ind.
Automatic Stoker Corp., 1529 E. Beverly Rd., Milwaukee.
Automatic Switch Co., 41 E. 11th St., New York City.
Automatic Temperature Control Co., Inc., 44 E. Logan St., Philadelphia.
Automatic Ventilator Company, 503 S. Shiawasse, Corunna, Mich.
Autovent Fan & Blower Div., Herman Nelson Corporation, 1805-27 N. Kostner Ave., Chicago, Ill.

B

Babcock & Wilcox Co., 85 Liberty St., New York City.
Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh, Pa.
Bache & Co., Semon, Greenwich & Morton Sts., New York City.
Badger Mfg. Co., 106 N. Frances St., Madison, Wis.
Badger Mfg. & Sales Co., 327 E. Brown St., Milwaukee, Wis.
Baer Brothers, 428 W. 37th St., New York City.
Bahnson Co., Reynolds Bldg., Winston-Salem, N. C.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland, O.
Baker Furnace & Cleaner Mfg. Co., 2505 Albion St., Toledo, O.
Baker Ice Machine Co., Inc., 1509 Evans St., Omaha, Nebr.
Baldor Electric Co., 4358 Duncan Ave., St. Louis, Mo.
Baldwin-Hill Company, 527 Klagg Ave., Trenton, N. J.
Ballantyne Co., 222 N. 16th St., Omaha, Nebr.
Balloffett Dies & Nozzle Co., Inc., 6825 Adams St., Guttenberg, N. J.
Banner Repair Parts Co., 103 E. Indianola Ave., Youngstown, Ohio.
Bantam Bearings Corp., South Bend, Ind.
Barber Asphalt Corporation, Barber, N. J.
Barber Co., Inc., 1600 Arch St., Philadelphia.
Barber-Colman Co., River & Loomis Sts., Rockford, Ill.
●Barber Gas Burner Co., 3704 Superior Ave., Cleveland, O.
Barclay, Inc., Robt., 128 N. Peoria St., Chicago, Ill.
Bard Mfg. Co., Evansport Road, Bryan, Ohio.
Bardes Range & Foundry Co., E. H., 2619 Colerain Ave., Cincinnati, O.
Barium Stainless Steel Corp., 1502 Allen Ave., S. E., Canton, O.
Barland Weatherstrip Material Co., 1960 E. 59th St., Cleveland, O.
Barnes Metal Products Co., 4425 W. 16th St., Chicago, Ill.
Barnes, W. O., 1297 Terminal Ave., Detroit.
Barrett Division, Allied Chemical & Die Corporation, 40 Rector St., New York City.
Barrett Engineers, 1322 Warrensville Center Rd., Cleveland Heights, O.
Barry Furnace Co., 308 N. B. St., Hamilton, O.
Bartlett Hayward Co., 200 Scott St., Baltimore.
Bartlett Mfg. Co., 3003 E. Grand Blvd., Detroit, Mich.
Bastian-Blessing Co., 4201 W. Peterson Ave., Chicago.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bath & Company, Cyril, E. 70th & Machinery Ave., Cleveland.
Bayer Co., A. J., Slauson & Santa Fe Aves., Los Angeles.
●Bayley Blower Co., 1817 S. 66th St., Milwaukee, Wis.
Beacon-Morris Corp., 702 Beacon St., Boston, Mass.
●Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, Conn.
Bear Mfg. Co., 2030 Fifth Ave., Rock Island, Ill.
Bearing Co. of America, Lancaster, Pa.
Beatrice Steel Tank Mfg. Co., 700 S. 7th St., Beatrice, Nebr.
Beatty Machine & Mfg. Co., 932 150th St., Hammond, Ind.
Beck Engineering Combustion Kompany, 3033 Spruce St., St. Louis, Mo.
Beckett Engineering Co., R. W., W. River St., Elyria, Ohio.
Beckley Perforating Co., 315 North Ave., Garwood, N. J.
Belanger Fan & Blower Co., 1230 18th St., Detroit.
Belco Exhaust Fan Mfg. Co., 3830-32 Olive St., St. Louis.
Belden Machine Company, 1108 Whalley Ave., New Haven, Conn.
Belfield Co., H., 435 N. Broad St., Philadelphia.
Bell & Gossett Co., Morton Grove, Ill.
Belmont Smelting & Refining Works, Inc., 281 Georgia Ave., Brooklyn, N. Y.
Bender Warrick Corp., 131 Pierce, Birmingham, Mich.
Benjamin Air Rifle Co., 1527 S. 8th St., St. Louis.
Benjamin Elec. Mfg. Co., Des Plaines, Ill.
●Benson Co., Inc., Alex R., 1040 S. Bay Rd., Hudson, N. Y.
●Berger Bros. Co., 229-237 Arch St., Philadelphia, Pa.
Berger Mfg. Div. of Republic Steel Corp., 1038 Belden Ave., N. E., Canton, O.
Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y.
Bergstrom Mfg. Corp., Neenah, Wis.
Berns Specialty Company, 1015 W. Lake St., Chicago, Ill.

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Bernz Co., Otto, 280 Lyell Ave. Rochester, N. Y.
Berry, Jr., F. E. & Co., Inc., Spring St., Everett, Mass.
Bersted Co., Martin, 341 N. Crawford Ave., Chicago.
Bertram Mfg. Co., 230 E. Ohio St., Chicago, Ill.
Bertsch & Co., Church St., Cambridge City, Ind.
Best Register Co., 2005 W. Oklahoma Ave., Milwaukee, Wis.
Bethlehem Foundry & Machine Co., Brodhead Ave. & Second St., Bethlehem, Pa.
●Bethlehem Steel Co. (Incorporated), Bethlehem, Pa.
Betz Air Conditioning Corp., 1820 Wyandotte St., Kansas City, Mo.
Betz Corp., 460 State St., Hammond, Ind.
●Beverly Shear Co., 3009 W. 110th Pl., Chicago.
Bieler & Son, Inc., L., 35-42 41st St., Long Island City.
Bien Air Conditioning Company, 1620 N. Spring St., Los Angeles.
Biersach & Niedermeyer Co., 1937 N. Hubbard St., Milwaukee, Wis.
Biggs Supply Co., B. C., Lincoln, Nebr.
Binkley Mfg. Co., Warrenton, Mo.
Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill.
Bird Archer Co., 4337 N. America St., Philadelphia.
Bird & Son, Inc., East Walpole, Mass.
Bishop & Babcock Mfg. Co., 4901 Hamilton Ave., Cleveland.
Bittner Engineering Co., 18-32 E. 135th St., New York City.
●Black & Decker Mfg. Co., Pennsylvania Ave., Towson, Md.
Black Servant Stoker Company, 3307 N. Broadway, St. Louis.
Blake & Johnson Co., Waterville, Conn.
Bliss Co., E. W., 1420 Hastings St., Toledo, O.
●Blockson & Company, East Fifth St., Michigan City, Ind.
Blood Brothers Machine Co., Div. Standard Steel Spring Co., Allegan, Mich.
Blower Application Company, 918 N. Fourth St., Milwaukee.
Bluffton Mfg. Co., 433 W. Main Cross St., Findlay, O.
Bodine Electric Co., 2254 W. Ohio St., Chicago, Ill.
Bogue Electric Co., 80 Glover Ave., Paterson, N. J.
Behn Aluminum & Brass, Michigan Ave. & Shelby St., Detroit, Mich.
Bollaert, M., 3936 Rhoda Ave., Oakland, Cal.
Borm Manufacturing Company, Elgin, Ill.
Bossert Company, Inc., 1002 Oswego St., Utica, N. Y.
Boston Auto Gage Co., 70 West St., Pittsfield, Mass.
Boston Gear Wks., Inc., North Quincy, Mass.
Bostwick-Goodell Co., Norwalk, Ohio.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia.
Bovee Furnace Works, 180 W. Eighth St., Waterloo, Iowa.
Boyd & Co., Inc., Chas. P., 250-252 N. Third St., Philadelphia.
Braden Mfg. Co., 431 N. 14th St., Terre Haute, Ind.
Brasco Manufacturing Co., 152nd & Commercial Ave., Harvey, Ill.
●Brauer Supply Co., A. G., 2100 Washington Ave., St. Louis.
Breidert, G. C., Co., 3328 S. Central Ave., Los Angeles.
●Bremil Mfg. Co., Box 1030, Erie, Pa.
Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago, Ill.
Bridesburg Foundry Co., Tacony & Duncan Sts., Philadelphia, Pa.
Bridgeport Brass Co., E. Main St., Bridgeport, Conn.
Bridgeport Chain & Mfg. Co., 964 Crescent Ave., Bridgeport, Conn.
Bridgeport Screw Co., Bridgeport, Conn.
Briggs Mfg. Co., 11631 Mack Ave., Detroit.
Brigham Oil Burner Co., 3745 Forest Park Blvd., St. Louis.
Brillion Furnace Co., Brillion, Wis.
Bristol Co., P. O. Box 1790, Waterbury, Conn.
Brooklyn Metal Ceiling Co., 283-89 Greene Ave., Brooklyn, N. Y.
Bros Boiler & Mfg. Co., Wm., Nicollet Island, Minneapolis.
Brown-Appton Company, 681 Fifth Ave., New York City.
Brown-Brockmeyer Co., Inc., 1098 Smithville Rd., Dayton, O.
Brown Instrument Co., Div. Minneapolis-Honeywell Regulator Co., 4443 Wayne Ave., Philadelphia.
Brownell Co., 300 N. Findlay St., Dayton, O.
Brownie Stoker Co., 840 N. Morgan St., Decatur, Ill.
Browning Mfg. Co., Inc., Central Ave., Main & Chester Sts., Maysville, Ky.
Brumme Mfg. Co., Bloomington, Ill.
●Brundage Co., 500-514 N. Park St., Kalamazoo, Mich.
Brunner Mfg. Co., 1821 Broad St., Utica, N. Y.
Bryan Steam Corp., P. O. Box 337, Peru, Ind.
Bryant Corp., C. L., 4610 St. Clair Ave., Cleveland, O.
Bryant Heater Co., 17825 St. Clair Ave., Cleveland, O.
Bubar, Hudson H., 15 Park Row, New York City.
Buckeye Portable Tool Co., 25 West Apple St., Dayton, O.
Buckeye Products Co., 7024 Vine St., Cincinnati, O.
Buffalo Forge Co., 497 Broadway, Buffalo, N. Y.
Buffalo Pumps, Inc., 171 Mortimer St., Buffalo, N. Y.
Buffalo Wire Works Company, 308-332 Terrace, Buffalo, N. Y.
Burdett Mfg. Co., 19 N. Sheldon St., Chicago, Ill.
Burgess Soldering Furnace Co., 292 E. Long St., Columbus, O.
Burke Electric Co., 1201 W. 12th St., Erie, Pa.
Burke Stoker & Mfg. Co., 921 W. 19th St., Chicago.
Burnham Boiler Corp., 1 Main St., Irvington, N. Y.
Burnham Stoker Co., 505 Columbia St., Vancouver, Wash.
Burnley Battery & Mfg. Co., Clay St., North East, Pa.
Burnside Steel Foundry Co. 1300 E. 92nd St., Chicago.
Burnwell Corp., 1113 N. 29th St., Allentown, Pa.
Burt Mfg. Co., 301 Main St., Akron, Ohio.
Bush Mfg. Co., 100 Wellington St., Hartford, Conn.
Butler Street Fdry. & Iron Co., 3422 Normal Ave., Chicago.
Butterworth, Jr., B. T., Oak Street, New Canaan, Conn.
Byers Co., A. M., Clark Bldg., Pittsburgh, Pa.
Byers Flashing Sales Division, 23 North Aberdeen, Chicago.

C

C. & H. Air Conditioning Fan Co., Inc., Edgewood & Ivy Sts., N. E., Atlanta, Ga.
Cabot, Inc., Samuel, 141 Milk St., Boston, Mass.
Calbar Paint & Varnish Co., 2620 N. Martha St., Philadelphia, Pa.
Caldwell Co., W. E., 200 E. Brandeis, Louisville, Ky.
California Wire Cloth Corp., 1001 22nd Ave., Oakland, Cal.
Calkins & Pearce, 203-205 E. Long St., Columbus, O.
Callahan Can Machine Co., Inc., 80 Richards St., Brooklyn, N. Y.
Caloroil Burner Corp., 1477 Park St., Hartford, Conn.
Campbell, Andrew C., Division of American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport, Conn.
Campbell Engineering Company, 214 W. College Ave., Appleton, Wisc.
Campbell Heating Co., P. O. Box 333, Des Moines, Ia.
Campbell Heating Co., E. K., 2445 Charlotte St., Kansas City, Mo.
Campbell Machine Co., 2845 Harriet Ave., Minneapolis.
Canatsey Electric Manufacturing Co., 620 Wyandotte, Kansas City, Mo.
Canton Steel Ceiling Mfg. Co., 497 West St., New York City.
Canton Stoker Corp., 507 Andrews Pl., S. W., Canton, O.
Canvas Products Co., 1236 S. 7th St., St. Louis.
Capps, Joseph, Inc., 3200 Ardmore St., South Gate, Cal.
Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York City.
Carey Co., Philip, Lockland, Ohio.
Carnegie-Illinois Steel Corp., Carnegie Bldg., Pittsburgh.
Carney Rockwool Co., Mankato, Minn.
Carpenter & Co., Geo. B., 440 N. Wells St., Chicago
Carpenter Heating & Stoker Co., 1929 E. 55th St., Cleveland.
Carrier Corp., 302 S. Geddes St., Syracuse, N. Y.
Carter Paint Co., 310 N. Main St., Liberty, Ind.
Cartier & Sons Company, M. N., 275 Canal St., Providence, R. I.
Carty & Moore Eng. Co., 511 W. Larned St., Detroit.
Cary Mfg. Co., Waupaca, Wis.
Celanese Celluloid Corp., 180 Madison Ave., New York City.
Celotex Corp., 120 S. LaSalle St., Chicago.
Central Die Casting & Mfg. Co., Inc., 2935 W. 47th St., Chicago.
Central Furnace & Stove Repair Co., 3937 Olive St., St. Louis, Mo.
●Central-West Machinery Co., 335 S. Western Ave., Chicago.
Central Wire & Iron Works, 621 E. Locust St., Des Moines, Ia.
●Century Electric Co., 1806 Pine St., St. Louis, Mo.
Century Engineering Corp., 401-431 Third St., S. E., Cedar Rapids, Ia.
Century Fan & Vent. Co., 103 E. 125th St., New York City.
Certain-teed Products Corp., 100 E. 42nd St., New York City.
Certified Flexible Couplings, 369 Lexington Ave., New York City.
Chace Co., W. M., 1606 Beard Ave., Detroit, Mich.
Chain Belt Co., 1618 W. Bruce St., Milwaukee.
Chalmers Oil Burner Co., 318 First Ave., North, Minneapolis.
Chamberlin Metal Weather Strip Co., 1254 La Brosse, Detroit, Mich.
Champion Blower & Forge Co., Harrisburg Ave. & Charlotte St., Lancaster, Pa.
Champion Furnace Pipe Co., 918 S. Adams St., Peoria, Ill.
●Champion Tool Co., 376 W. 41st Place, Los Angeles, Cal.
Chandler Co., 804 1st Ave., N. W., Cedar Rapids, Ia.
Chapman Slate Co., 546 Main St., Bethlehem, Pa.
Char-Gale Mfg. Co., 3127 Hiawatha Ave., Minneapolis, Minn.
Chase Brass & Copper Co., Incorporated, 236 Grand St., Waterbury, Conn.
Cheesman-Elliot Co., Inc., 639 Kent Ave., Brooklyn.
Chelsea Fan & Blower Co., Inc., 1206 S. Grove St., Irvington, N. J.
●Cheney Metal Products Company, 33 Oxford St., Trenton, N. J.
Chicago Automatic Stoker Co., Inc., 14 N. Clinton St., Chicago, Ill.
Chicago Belting Co., 113 N. Green St., Chicago.
Chicago Die Casting Co., 2520 W. Monroe St., Chicago.
Chicago Expansion Bolt Co., 2240 W. Ogden Ave., Chicago.
Chicago Filter Co., P. O. Box 807, Joliet, Ill.
Chicago Fire Brick Co., 1467 N. Elston Ave., Chicago, Ill.
Chicago Furnace Supply Co., 1278 Clybourn Ave., Chicago.
Chicago Metal Hose Corp., 1300 S. Third Ave., Maywood, Ill.
Chicago Perforating Co., 2445 W. 24th Pl., Chicago, Ill.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.

Chicago Pump Co., 2330 Wolfram St., Chicago, Ill.
Chicago Rawhide Mfg. Co., 1312 Elston Ave., Chicago.
Chicago Rivet & Mach. Co., 9600 W. Jackson Blvd., Bellwood, Ill.
Chicago Steel Foundry Co., Kedzie & 37th St., Chicago.
Chicago Steel Furnace Co., 7934 S. Chicago Ave., Chicago.
Chicago Venetian Blind Co., 2427 W. 14th St., Chicago.
Choate Mfg. Co., 3464 Principio Ave., Cincinnati, Ohio.
Cincinnati Electrical Tool Co., The, 2684 Madison Rd., Cincinati, O.
Cincinnati Mfg. Co., Gest & Evans Sts., Cncinnati, O.
Cincinnati Shaper Co., Hopple, Garrard & Elam, Cincinnati, O.
Cincinnati Sheet Metal & Roofing Co., 230 E. Front St., Cincinnati, O.
Cincinnati Stamping Co., 28-34 W. McMicken Ave., Cincinnati, O.
Circulators & Devices Mfg. Corp., 100 Prince St., New York City.
●Clarage Fan Co., North & Porter Sts., Kalamazoo, Mich.
Clark Bros. Bolt Co., Milldale, Conn.
Clark Co., Henry N., 56-62 Union St., Boston.
Clark Controller Co., 1146 E. 152nd St., Cleveland, O.
Clark Dust Control Company, 210 N. Mozart St., Chicago.
Clark Jr., Electric Co., Jas., 600 E. Bergman St., Louisville, Ky.
Clark Stek-O Corp., 1631 Dewey Ave., Rochester, N. Y.
Clauss Shear Co., Fremont, O.
Clay Equipment Corp., Cedar Falls, Ia.
Clayton & Lambert Mfg. Co., 11111 French Rd., Detroit.
Clearing Machine Corp., 6499 W. 65th St., Chicago.
Clendenin Brothers, Inc., 108 South St., Baltimore.
Clements Mfg. Co., 6650 S. Narragansett Ave., Chicago.
Clemenson Bros., Inc., Middletown, N. Y.
Cleveland Brush Factory, Inc., 7115 Dearborn Ave., S. W., Cleveland, O.
Cleveland Co-Operative Stove Co., 67th and Central Ave., Cleveland.
Cleveland Punch & Shear Works Co., E. 40th & St. Clair Ave., Cleveland, O.
Climatemaker Slide Rule Service, Box 904, Bloomington, Ill.
Clinton Metallic Paint Co., P. O. Box 278, Clinton, N. Y.
Clizbe Bros. Mfg. Co., P. O. Box 31, Plymouth, Ind.
Clough, A. W., 28 S. Broad St., Meriden, Conn.
Coal-O-Matic Stoker Co., Trucksville, Pa.
Coast Insulating Corp., 634 S. Western Ave., Los Angeles.
Cocking, Geo. J., 1336 W. 5th St., Santa Ana, Cal.
Coddington Manufacturing Co., E. D., 5024 N. 37th St., Milwaukee.
Colebrook & Sons, Inc., W. H., 246 Walton St., Syracuse, N. Y.
Cole Hot Blast Manufacturing Co., 3108 W. 51st St., Chicago.
Cole-Sullivan Engineering Company, 1316 Third St., North Minneapolis, Minn.
Coleman Lamp & Stove Co., 2nd & St. Francis, Wichita, Kan.
Colonial Alloys Company, Sheet & Tube Div., 2154 E. Somerset St., Philadelphia.
Columbia Burner Co., 729 Ewing St., Toledo, O.
Columbia Mills, Inc., Saginaw, Mich.
Columbia Steel Co., (Sub. United States Steel Corp.) Russ Bldg., 235 Montgomery St., San Francisco, Cal.
Columbian Enameling & Stamping Co., 1536 Beech St., Terre Haute, Ind.
Columbus Heating and Ventilating Co., 182 N. Yale Ave., Columbus, O.
Columbus Metal Products, Inc., 767 N. 4th St., Columbus, O.
Comfort Products Corporation, 7 W. 147th St., Harvey, Ill.
Commercial Shearing & Stamping Co., 1775 Logan Ave., Youngstown, Ohio.
Commonwealth Electric Welder Mfg. Co., 3200 Oxford St., Philadelphia.
Compton Shear Co., W. H., 314 Camden, Newark, N. J.
●Conco Corporation, Mendota, Ill.
●Condensation Engineering Corp., 2515 S. Archer Ave., Chicago, Ill.
Conditionaire Unit Co., 2821 Montrose Ave., Chicago.
Congress Die Casting Div., Congress Tool & Die Co., 3750 East Outer Drive, Detroit.
Conklin Brass & Copper Co., Inc., T. E., 54-60 Laayette St., New York City.
●Connor Eng. Corp., W. B., Dorex Div., 114 E. 32nd St., New York City.
Connors Paint Mfg. Co., Wm., 669-683 River St., Troy, N. Y.
Consolidated Car-Heating Co., Inc., Albany, N. Y.
Continental Diamond Fibre Co., Newark, Del.
Continental Electric Co., Inc., 323 Ferry St., Newark, N. J.
Continental Machines Incorporated, 1301 Washington Ave., South, Minneapolis.
Continental Machines, Inc., 1203 Thacker, Des Plaines, Ill.
Continental Products Co., 1150 E. 222nd St., Euclid, O.
Continental Rubber Works, 1900 Liberty Parkway, Erie, Pa.
Continental Screw Co., Mt. Pleasant, New Bedford, Mass.
●Continental Steel Corp., 1108 S. Main St., Kokomo, Ind.
Continental Stove Corp., Front & Walnut, Ironton, O.
Cook, Inc., A. D., Lawrenceburg, Ind.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cooper Co., Clark, Palmyra, N. J.
Cooper & Cooper, Inc., 37 Fenn St., Pittsfield, Mass.
Cooper Oven Thermometer Co., Pequabuck, Conn.
Copeland Refrigeration Corp., Sidney, Ohio.
Copper Roofs Corp., 5060 Plankinton Bldg., Milwaukee.
Copperweld Steel Co., Glassport, Pa.
Coppus Engineering Corp., 344 Park Ave., Worcester, Mass.
Corbin Screw Corp., 300 High St., New Britain, Conn.
Corbman Bros., Inc., 315 N. 7th St., Philadelphia, Pa.
Cork Import Corp., 320 W. 42nd St., New York City.
Cork Insulation Co., Inc., 155 E. 44th St., New York City.
Cornell Iron Works, Inc., 36th Ave. & 13th St., Long Island City, N. Y.
Coroaire Heater Corp., 1422 Euclid Ave., 1124 Hanna Bldg., Cleveland, O.
Cox Roofing Co., 1014 North-West Blvd., Winston-Salem, N. C.
Cramer Company, Inc., The R. W., Centerbrook, Conn.
Crane Co., 836 S. Michigan Ave., Chicago, Ill.
Crary Mfg. Co., 396 N. Second St., Middleport, O.
●Crescent Tool Co., 230 Harrison St., Jamestown, N. Y.
Crise Electric Mfg. Co., 2040 E. Main St., Columbus, Ohio.
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Cross Engineering Co., 160-178 Dundaff St., Carbondale, Pa.
Crowe Name Plate & Mfg. Co., 3701 Ravenswood Ave., Chicago.
Crown Fuel Saver Co., Richmond, Ind.
Crown Iron Works, 1229 N. E. Tyler, Minneapolis, Minn.
Crucible Steel Co. of America, 405 Lexington Ave., New York City.
Curtis Refrigerating Machine Co., 1946 Kienlen Ave., St. Louis, Mo.
Cutler-Hammer, Inc., N. 12th St. and W. St. Paul Ave., Milwaukee, Wis.

D

Dahlstrom Metallic Door Co., S. E. Cor. E. Second & Buffalo Sts., Jamestown, N. Y.
Dallas Engineering Co., Inc., 2000 S. Akard, Dallas, Texas.
Dallman Supply Co., 6th & Q Sts., Sacramento, Cal.
Dalzen Manufacturing Co., 12255 E. Eight Mile Rd., Detroit.
Dampney Co. of America, 1243 River St., Hyde Park, Boston, Mass.
Daniels Mfg. Co., Inc., Sam, Daniels Rd., Hardwick, Vt.
Danville Stove & Mfg. Co., Beaver St., Danville, Pa.
Davidson Hy Duty Roof Fan Co., Newton, Mass.
Davies Air Filter Corp., 118-120 E. 25th St., New York City.
Davis & Co., Inc., Dean W., 549 W. Fulton St., Chicago.
Davis Regulator Co., 2546 S. Washtenaw Ave., Chicago.
Davy Fuel & Supply Co., Stoker Div., 14460 Dexter Blvd., Detroit.
Day Co., The, 2938 Pillsbury Ave., Minneapolis, Minn.
Day & Night Manufacturing Co., Monrovia, Cal.
Dayton Greenhouse Mfg. Co., P. O. Box 801, Dayton, O.
Dayton Pump & Mfg. Co., 500 N. Webster St., Dayton, O.
Dayton Rogers Mfg. Co., 2830 13th Ave., So., Minneapolis.
Dayton Rubber Mfg. Co., 2345 W. Riverview Ave., Dayton, O.
Debevoise Co., 968 Grand St., Brooklyn, N. Y.
De Bothezat Ventilating Equipment Division, American Machine and Metals, Inc., East Moline, Ill.
Decatur Iron & Steel Co., P. O. Box 72, Decatur, Ala.
Decatur Pump Co., 2750 Nelson Park Rd., Decatur, Ill.
Defender Automatic Regulator Co., 308 S. 8th St., St. Louis.
De Laval Steam Turbine Co., 300 Nottingham Way, Trenton, N. J.
Delaware, Lackawanna & Western Coal Co., 120 Broadway, New York City.
Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester, N. Y.
Delco Products Division, General Motors Corp., 329 E. First St., Dayton, O.
D'Elia Oil Burner Co., Inc., 145 Stratford Ave., Bridgeport, Conn.
Deming Co., 148 Aetna St., Salem, O.
Demuth & Sons, Charles, 112 New York Blvd., Jamaica, N. Y.
Deniston Co., 4856 S. Western Ave., Chicago, Ill.
●Densewood Corporation, Elkhorn, Wis.
Densmore-Quinlan Co., 910 74th St., Kenosha, Wis.
Deshler Foundry & Machine Works, 140-142 S. East Ave., Deshler, O.
●Des Moines Stove Repair Co., 107 S. W. Second St., Des Moines, Ia.
Detroit Air Conditioning Service Co., Inc., 11537 Twelfth St., Detroit.
Detroit Gasket & Mfg. Co., 12840 Burt Rd., Detroit.
Detroit Graphite Company, 550 Twelfth St., Detroit.
Detroit Lubricator Co., 5900 Trumbull Ave., Detroit, Mich.
Detroit-Michigan Stove Co., 6900 E. Jefferson Ave., Detroit.
Detroit Moulding Div., 9210 Russell St., Detroit.
Detroit Safety Furnace Pipe Co., 5960 Second Blvd., Detroit.
Detroit Stamping Co., 350 Midland Ave., Detroit.
Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit.
Detroit Stoker Co., General Motors Bldg., Detroit, Mich. (Sales & Engineering); Monroe, Mich. (Main Office & Works).
Detroit Surfacing Machine Co., 7433 W. Davison St., Detroit.

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Detroit Torch & Mfg. Co., 12057 Cardoni Ave., Detroit.
De Vilbiss Co., 300 Phillips Ave., Toledo, O.
Devlin Mfg. Co., Thos., Burlington, N. J.
Devoe & Raynolds Company, Inc., 44th St. & 1st Ave., New York City.
Diamond Castings Co., Terra Cotta Rd., Johnsonburg, Pa.
Diamond Chain & Mfg. Co., 400 Kentucky Ave., Indianapolis, Ind.
Diamond Expansion Bolt Co., Inc., 500 North Ave., Garwood, N. J.
Diamond Manufacturing Co., 243 W. 8th St., Wyoming, Pa.
Diceler Corp., Greenville, Pa.
Dick Co., Inc., R. & J., 24-48 Sade St., Passaic, N. J.
Dickey-Grabler Co., 10298 Madison Ave., Cleveland.
Dickson Co., 7420 Woodlawn Ave., Chicago.
Dickson Coal Co., 30 Rockefeller Plaza, New York City.
Dickson Weatherproof Nail Co., P. O. Box 466, Evanston, Ill.
Dieckmann Co., Ferdinand, 1180 Harrison St., Cincinnati, O.
Diehl Mfg. Co., Trumbull St., Elizabethport, N. J.
Diener Mfg. Co., Geo. W., 400 N. Monticello Ave., Chicago.
Disston & Sons, Inc., Henry, Unruh & Milner Sts., Tacony Sta., Philadelphia.
Dockson Corporation, 3847 Wabash Ave., Detroit.
Dodge Mfg. Corp., 500 S. Union St., Mishawaka, Ind.
Doheny Co., John J., 326 Lake St., Belmont, Mass.
Dornback Furnace & Fdry. Co., 724 E. 103rd St., Cleveland.
Dow Chemical Company, 919 Jefferson Ave., Midland, Mich.
●Dowagiac Steel Furnace Co., Beeson St., Dowagiac, Mich.
Downs-Smith Brass & Copper Co., 304-320 E. 45th St., New York City.
●Doyle Vacuum Cleaner Co., 225 Stevens St., S. W., Grand Rapids, Mich.
Dracco Corp. 4057 E. 116th St., Cleveland, O.
Dragert Company, C. H., Inc., 237 India St., Brooklyn, N. Y.
Drayer & Hanson, Inc., 738 E. Pico Blvd., Los Angeles.
●Dreis & Krump Mfg. Co., 7404 Loomis Blvd., Chicago, Ill.
Dry-Zero Corporation, 222 W. North Bank Drive, Chicago.
Dual-Air Fan Corporation, 711 W. Lake St., Chicago.
Dual Remote Control Co., Wayne, Mich.
Dunn, Inc., Struthers, 1315 Cherry St., Philadelphia, Pa.
Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich.
du Pont de Nemours & Co., E. I., Wilmington, Del.
Durakool, Inc., 1010 N. Main St., Elkhart, Ind.
Duraloy Co., Scottdale, Pa.
Duriron Co., Inc., 450 N. Findlay St., Dayton, Ohio.
Duro Metal Products Co., 2649 N. Kildare Ave., Chicago, Ill.
Dusing & Hunt, Inc., 1927 Elmwood Ave., Buffalo, N. Y.
Dwyer Mfg. Co., F. W., 565 W. Washington St., Chicago.
Dyer Welder & Engineering Co., 7 E. 19th St., Kansas City, Mo.

Electric Materials Co., Clay & Washington Sts., North East, Pa.
Electric Soldering Iron Co., Inc., West Elm St., Deep River, Conn.
Electric Sprayit Co., 15th & Illinois Aves., Sheboygan, Wis.
Electric Vacuum Cleaner Co., Inc., 1734 Ivanhoe Rd., Cleveland, O.
Electric Valve Mfg. Co., Inc., 68 Murray St., New York City.
Electrimatic Division, The Simoniz Company, 2100 Indiana Ave., Chicago.
Electroaire Corp., 1455 W. Congress St., Chicago, Ill.
Electrogas Furnace Co., 255 Ninth St., San Francisco.
Electrol Incorporated, 934 Main St., Clifton, N. J.
Electrovent Corp., 5245 Western Ave., Detroit, Mich.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago, Ill.
●Elgo Shutter & Mfg. Co., 6970 W. Jefferson Ave., Detroit.
Ellison Draft Gage Co., 214 W. Kinzie St., Chicago, Ill.
Elsey Metal Specialties Co., 1535 Spruce St., Detroit, Mich.
Emerson Electric Mfg. Co., 1843 Washington Ave., St. Louis.
Empire Door Co., Inc., 226 E. 144th St., New York City.
Empire Metal Co., 820 E. Water St., Syracuse, N. Y.
Empire Sheet & Tin Plate Co., N. Bowman St., Mansfield, O.
Empire Ventilation Equipment Co., 35-39 Vernon Blvd., Long Island City, N. Y.
Engelhard, Inc., Chas., 90 Chestnut St., Newark, N. J.
Engineering and Research Corporation, Riverdale, Md.
Enterprise Foundry Co., 1123 E. "B" St., Belleville, Ill.
Equipment Engineering Co., 2853 Columbus Ave., Minneapolis.
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Ergolyte Mfg. Co., 3644 Lawrence St., Philadelphia.
Eselgroth & Co., 22 Edison Place, Newark, N. J.
Essick Manufacturing Co., 1950 Santa Fe Ave., Los Angeles, Cal.
Estate Stove Co., Hamilton, O.
Etched Products Co., 3901 Queens Blvd., Long Island City.
Eugene Excelsior Company, Eugene, Ore.
Eutectic Welding Alloys Company, 40 Worth St., New York City.
Evanoil Div., Evans Products Co., 15310 Fullerton Ave., Detroit.
Evans Corp., George, 121 37th St., Moline, Ill.
●Evans Machine Co., L. R., Sandwich, Ill.
Everhot Mfg. Co., 57 S. 19th Ave., Maywood, Ill.
Everite Pump & Mfg. Co., Inc., 617 N. Price St., Lancaster, Pa.
Excello Oil Heating Corp., 111½ S. 24th St., Omaha, Nebr.
Excelsior Steel Furnace Co., 118 S. Clinton St., Chicago.
Excelsior Stove & Mfg. Co., 510 S. Front St., Quincy, Ill.
Excelsior Tool and Machine Co., 31st & Ridge Ave., East St. Louis, Ill.
Extruded Plastics, Inc., New Canaan Ave., Norwalk, Conn.

E

Eagle-Picher Lead Co., American Bldg., Central Pkwy. & Walnut, Cincinnati, Ohio.
Eaglesfield Ventilator Co., 910-20 Dorman St., Indianapolis, Ind.
Earl Company, Warren, 3409 McKinney Ave., Houston, Texas.
East Anaheim Sheet Metal Works, 2299 E. Anaheim Blvd., Long Beach, Cal.
Eastern Oil & Equipment Co., 133 Marginal Way, Portland, Me.
Eastern Rolling Mill Co., P. O. Box 1975, Baltimore, Md.
Eastern States Supply Co., 127 Troutman St.., Brooklyn, N. Y.
Eav-Tex Company, 1109 Garfield Ave., Upper Darby, Pa.
Eclipse Air Brush Company, Inc., 381 Park Ave., Newark, N. J.
Eclipse Aviation Div. Bendix Aviation Corp., Bendix, N. J.
Eclipse Fuel Engineering Co., 707 S. Main St., Rockford, Ill.
●Econ-O-Col Stoker Division of Cotta Transmission Corp., 2340 11th St., Rockford, Ill.
Economy Electric Manufacturing Co., 4634 W. 21st Pl., Cicero, Ill.
Economy Pumps, Inc., 1000 Weller Ave., Hamilton, Ohio.
Eddy Stoker Corp., 4717 W. North Avenue, Chicago.
Edison, Inc., Thomas A., Instrument Div., Lakeside Ave., West Orange, N. J.
Edwards Furnace Co., 25 East Ave., Wellsboro, Pa.
Edwards Mfg. Co., Inc., 337 Eggleston Ave., Cincinnati, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Eiermann Floor Scraper Co., 143 Irving Ave., Port Chester, N. Y.
Elker Mfg. Company, Ogallala, Nebr.
●Eisler Engineering Co., 761 S. 13th St., Newark, N. J.
Elco Tool & Screw Corporation, 1800 Broadway, Rockford, Ill.
Electric Arc, Inc., 152 Jeliff Ave., Newark, N. J.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Electric Furnace-Man, Inc., 101 Park Ave., New York City.
Electric Machinery Mfg. Co., 1331 Tyler St., N. E., Minneapolis.

F

Fafnir Bearing Co., 37 Booth St., New Britain, Conn.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Ill.
Fairfield Oil Heating Co., Inc., Mason St., Greenwich, Conn.
Fairmont Aluminum Co., Fairmont, W. Va.
Fales Chemical Co., Inc., 545 Fifth Ave., New York City.
Falstrom Co., Main Ave. & D. L. & W. R. R., Passaic, N. J.
Faraday Engineering Co., 56 Clearway St., Back Bay, Boston.
Fargo Foundry Co., 92 N. P. Ave., Fargo, N. D.
Farquhar Furnace Co., 150 Owens Ave., Wilmington, O.
Farrell-Cheek Steel Company, Stoker Parts Div., First & Lane Sts., Sandusky, Ohio.
Farris Furnace Co., 920-930 Enos Ave., Springfield, Ill.
Faultless Heater Corp., 10402 St. Clair Ave., Cleveland, O.
Favorite Stove Co., 440 Weber St., Piqua, O.
Fedders Mfg. Co., Inc., 57 Tonawanda St., Buffalo, N. Y.
Federal Machine & Welder Co., 212 Dana St., Warren, O.
Federal-Mogul Corp., 11031 Shoemaker St., Detroit.
Fee & Mason Mfg. Co., 81 Beekman St., New York City.
Fee and Stemwedel, Inc., 2210 Wabansia Ave., Chicago.
Felters Co., Inc., 210 South St., Boston, Mass.
Fern, Ralph, 2517 Boulevard Ave., Scranton, Pa.
Ferro Enamel Corporation, 4150 E. 56th St., Cleveland.
Field Control Division, H. D. Conkey & Company, Drawer One Eleven, Mendota, Ill.
Figge Mfg. Co., 139 W. Madison St., Chicago, Ill.
Fingles Company, The, Reisertown Road at Elgin Ave., Baltimore, Md.
Finnell Rotary Stokers, Inc., 502 East St., Elkhart, Ind.
●Fireline Stove & Furnace Lining Co., 1800 Kingsbury St., Chicago, Ill.
Firemood Machine Wks., Converse, Ind.
Firestone Tire & Rubber Co., Firestone Park, Akron, O.
Fir-Tex Insulating Board Co., St. Helens, Ore.
Fisher Governor Co., 203 S. First Ave., Marshalltown, Ia.
●Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York City.
Flemm Lead Co., Inc., Bradley Ave. & School St., Long Island City, N. Y.
Flexo Supply Co., Inc., 4221 Olive St., St. Louis.
Flintkote Co., 30 Rockefeller Plaza, New York City.

Flood Company, 6217 Carnegie Ave., Cleveland.
Floral City Co., 402 S. Monroe St., Monroe, Mich.
Florence Stove Co., 305 School St., Gardner, Mass.
Floyd-Wells Co., Royersford, Pa.
Flynn & Emrich Co., 301 Holliday St., Baltimore, Md.
Fossum Mfg. Co., M. H., 1795 St. Clair Ave., St. Paul.
Foote Foundry Co., J. B., N. Main St., Fredericktown, O.
Ford Roofing Products Company, 111 W. Washington St., Chicago.
●Forest City Foundries Co., 2500 W. 27th St., Cleveland, O.
Forman Air Conditioning & Engineering Co., 345 W. 40th St., New York City.
Fossum Mfg. Co., M. H., 1795 St. Clair Ave., St. Paul.
Fox Control & Mfg. Co., 3589 E. 93rd St., Cleveland.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Foy Stoker Mfg. Co., 1419 Diversey, Chicago.
Franklin Gas Heating Co., 1333 Vine St., Cincinnati, O.
Fraser and Johnston Co., 725 Potrero Ave., San Francisco.
Frederick Iron & Steel Co., E. 7th & East Sts., Frederick, Md.
Freed Heater & Stoker Company, Collegeville, Pa.
Freed Products Co., 1510 Third Ave., Moline, Ill.
Fresh'nd-Aire Co., 210 N. Clinton St., Chicago.
●**Frey & Co., Frank P., 2634 W. Madison St., Chicago.**
Frick Co., W. Main St., Waynesboro, Pa.
Friedley-Voshart Co., 763 W. Lexington St., Chicago.
Friez & Sons, Julien P., Taylor Ave. at Loch Raven Blvd., Towson, Md.
Frigidaire Div. General Motors Corporation, 300 Taylor St., Dayton, O.
Front Rank Furnace Co., Div. Liberty Foundry Co., Sidney & Ohio Sts., St. Louis.
Fuel Savers Inc., 15th & Herr Sts., Harrisburg, Pa.
Fuller-Warren Co., 2506 N. 32nd St., Milwaukee, Wis.
Fulton Sylphon Co., Box 400, Knoxville, Tenn.
Furbio Co., Hermansville, Mich.
Furnaceslave, Inc., 1080 E. 52nd St., Indianapolis, Ind.

G

G. & O. Mfg. Co., 138 Winchester Ave., New Haven, Conn.
G. & S. Tool Co., 3790 Grinnell, Detroit, Mich.
G. D. S. Machinery & Supply Co., 101 Walker St., New York City.
G. M. Manufacturing Co., 50 W. Third St., New York City.
Gale Products, Galesburg, Ill.
Gallaher Company, Owatonna, Minn.
Galva Heater Co., Galva, Ill.
Galv-Weld, Incorporated, 314 West First St., Dayton, Ohio.
Gammeter Co., W. F., Lincoln Ave. Extension, Cadiz, O.
●Gar Wood Industries, Inc., 7924 Riopelle St., Detroit.
Garber Lumber & Construction Co., Strasburg, O.
Garden City Fan Co., 332 S. Michigan Blvd., Chicago, Ill.
Garden City Laboratory, Inc., 2744 W. 37th Place, Chicago.
Gardiner Metal Co., 2514 W. 48th Pl., Chicago, Ill.
Gardner Manufacturing Co., Lock Box 142, Horicon, Wis.
Gascoil Furnace Co., The, 3126 Preble Ave., Pittsburgh.
Gasconaire, Inc., 3255 Goldner Ave., Detroit.
Gasoroil Mfg. Corp., Genoa City, Wis.
Gates Rubber Company Sales Div., Inc., 999 S. Broadway, Denver, Colo.
Gaul Air Conditioner Co., 3116 N. Main St., Dayton, Ohio.
Gehl Bros. Mfg. Co., West Bend, Wis.
Gehri Co., 1117 Tacoma Ave., Tacoma, Wash.
General Air Conditioning Corp., 4411 Appleton St., Cincinnati, Ohio.
General Aire Company, 118 N. Sixth St., Philadelphia.
●**General Blower Co., 403 N. Peoria St., Chicago.**
General Blower Co., Inc., 5335 Market St., Philadelphia.
General Blower Corp., 1450 Army St., San Francisco.
●General Controls Co., 801 Allen Ave., Glendale, Cal.
General Electric Co., Air Cond. Div., 5 Lawrence St., Bloomfield, N. J.
General Electric Co., Plastics Div., 1 Plastics Ave., Pittsfield, Mass.
General Electric Co., 1 River Rd., Schenectady, N. Y.
General Equipment Co., 311-15-19 S. Wichita St., Wichita, Kan.
General Etching & Mfg. Co., 3076 W. Grand Ave., Chicago.
General Gas Light Co., Kalamazoo, Mich.
General Insulating Products Co., 8821 15th Ave., Brooklyn.
General Machine Co., Inc., Fourth & Furnace Sts., Emmaus, Pa.
General Machinery Co., 3500 Riverside Ave., Spokane, Wash.
General Metal Products Co., 3838 Delor St., St. Louis, Mo.
General Motors Corp., Moraine Products Div., Dayton, Ohio.
General Oil Heating Corp., 528 Jefferson St., West New York, N. J.
General Plate Div. Metals & Controls Corp., 34 Forest St., Attleboro, Mass.
General Refrigeration Division, Yates-American Machine Co., Shirland Ave., Beloit, Wis.
General Sales & Products Co., 242 Saratoga St., Cohoes, N. Y.
General Sheet Metal Works, Inc., Silliman Ave. & Ash St., Bridgeport, Conn.
General Stokers, Inc., 6817 N. Franklin St., Philadelphia.
Gerard Chemical Co., 87 Front St., Elizabeth, N. J.
●Gerett Corp., M. A., 2947 N. 30th St., Milwaukee.
Gerhardt, W. F., 2007 W. Broad St., Richmond, Va.
Gerock Bros. Mfg. Co., 1300 S. Vandeventer Ave., St. Louis.
Gerstein & Cooper Co., 1 W. Third St., South Boston, Mass.
Geuder, Paeschke & Frey Co., W. St. Paul Ave. and N. 15th St., Milwaukee, Wis.
Giant Mfg. Company, South Ave., Council Bluffs, Ia.
Gibraltar Engineering Co., 911 N. Orange Dr., Los Angeles.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Gilbert & Son, Harry E., 220 Brooklawn Terrace, Bridgeport, Conn.
●Gillen Company, J. L., Dowagiac, Mich.
Gillian Mfg. Co., 7752 Dubois St., Detroit.
Gilmer Co., L. H., Cottman & Keystone Sts., Tacony, Philadelphia, Pa.
Gilmore, Jackson E., 167 E. State St., Columbus, Ohio.
Glasby Manufacturing Co., Inc., J. P., Locust Ave. & Nelson St., Bloomfield, N. J.
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn, N. Y.
Gleason-Avery, Inc., 27 Clark St., Auburn, N. Y.
Glidden Co., 11001 Madison Ave., Cleveland, O.
Globe Iron Roofing & Corrugating Co., Newport, Ky.
Globe Machine & Stamping Co., 1250 W. 76th St., Cleveland, O.
Globe Machinery & Supply Co., East 1st & Court Ave., Des Moines, Ia.
Goese Mfg. Co., 2548 N. 18th St., Milwaukee, Wis.
Goethel Co., Alfred C., 2337 N. 31st St., Milwaukee, Wis.
Goethel Sheet Metal Works, Alfred, 1912 N. Killian Pl., Milwaukee, Wis.
Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.
Goldens' Foundry & Machine Co., P. O. Box 96, Columbus, Ga.
Gold Seal Furnace Co., 234 S. Fourth St., Minneapolis, Minn.
Gold Star Oil Burner Mfg. Co., Inc., 146 Warburton Ave., Yonkers, N. Y.
Goodrich Co., B. F., 500 S. Main St., Akron, O.
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O.
Gould Engineering Co., 110 Brookline Ave., Cambridge, Mass.
Goulds Pumps, Inc., Fall St., Seneca Falls, N. Y.
Governair Corp., 605 W. Main St., Oklahoma City, Okla.
Grabler Manufacturing Co., 6565 Broadway, Cleveland.
Grainger, Inc., W. W., 815 W. Congress St., Chicago.
Grammes & Sons, Inc., L. F., 388 Union St., Allentown, Pa.
Grand Rapids Blow Pipe and Dust Arrester Co., 525 Monroe Ave., Grand Rapids, Mich.
Grand Rapids Die & Tool Co., 113-117 Michigan St., Grand Rapids, Mich.
Grand Rapids Wire Products Co., 503 Front Ave., N. W., Grand Rapids, Mich.
Granite City Steel Co., 20th & Madison Ave., Granite City, Ill.
●Grant Wilson, Inc., 4101 W. Taylor St., Chicago.
Graton & Knight, 356 Franklin St., Worcester, Mass.
●Gray, G. L., 507 Grand Ave., New Haven, Conn.
Gray Metal Products, Inc., 30 Carlton St., Rochester, N. Y.
Great Lakes Steel Corporation, Ecorse, Detroit.
Great National Air Conditioning Corp., 1305 S. Lamar St., Dallas, Tex.
Green Colonial Furnace Company, 322 S. W. Third St., Des Moines, Ia.
Green Fire Brick Co., A. P., Mexico, Mo.
Green Mfg. Co., 605 W. Washington St., Chicago.
Greene, Tweed & Co., 4377 Bronx Blvd., Bronx, N. Y.
Greenlee Tool Co., 2136 Twelfth St., Rockford, Ill.
Grinnell Co., Inc., 260 W. Exchange St., Providence, R. I.
Griscom-Russell Co., The, 285 Madison Ave., New York City.
Griswold Mfg. Co., 1001-1065 W. 12th St., Erie, Pa.
Grob Brothers, Grafton, Wis.
Grobet File Corp. of America, 421 Canal St., New York City.
Grossenbacher Furnace Co., 9416 Milton Ave., St. Louis.
Guardian Electric Mfg. Co., 1621 W. Walnut St., Chicago.
Guardian Utilities Co., 215 E. Michigan St., Michigan City, Ind.
Guth Co., Edwin F., 2615 Washington Blvd., St. Louis.

H

H-B Instrument Co., Inc., 2518 N. Broad St., Philadelphia.
H P L Mfg. Co., 2015 E. 65th St., Cleveland.
Hague & Co., Inc., Alfred, 227 34th St., Brooklyn, N. Y.
Haines Gauge Company, Inc., 2301 W. Allegheny Ave., Philadelphia. (Thickness Gauges)
Hall Mfg. Co., Cedar Rapids, Ia.
●Hall-Neal Furnace Co., 1324 N. Capitol Ave., Indianapolis, Ind.
Hallstead Iron Foundry, Hallstead, Pa.
Hamilton Automatic Stoker Corp., 1637 Dixie Highway, Hamilton, O.
Hammelt Electric Mfg. Co., 209 W. 19th Ter., Kansas City, Mo.
Hammond Machinery Builders, 1626 Douglas Ave., Kalamazoo, Mich.

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Hampton Electric Mfg. Co., Third & Archie Sts., Oakmont, Pittsburgh, Pa.
Handelan Washed Air Co., 4006 Washburn Ave., South Minneapolis.
Handley Brown Heater Co., 209 E. Washington Ave., Jackson, Mich.
Handy & Harman, 82 Fulton St., New York City.
●Hansen Mfg. Co., Inc., Princeton, Ind.
Hardinge Oil Burner & Mfg. Co., 1770 Berteau Ave., at Ravenswood, Chicago, Ill.
Hare Stoker Corp., 4853 Rivard St., Detroit, Mich.
Harnischfeger Corp., 4400 W. National Ave., Milwaukee.
●Harrington & King Perforating Co., 5649 Fillmore St., Chicago, Ill.
Harris, A. R., 4546 Hohman Ave., Hammond, Ind.
Harris Calorific Co., 5501 Cass Ave., N. W., Cleveland, O.
●Hart & Cooley Mfg. Co., Holland, Mich.
Hart & Crouse Corporation, 301 Turner St., Utica, N. Y.
Hart Mfg. Co., Bartholomew & Hamilton Sts., Hartford, Conn.
Hart Mfg. Co., 2006 N. Western Parkway, Louisville, Ky.
Hart Oil Burner Corp., 3200 N. Adams St., Peoria, Ill.
Hartzell Propeller Fan Co., 1025 Roosevelt Ave., Piqua, O.
Harvey, Inc., Sid, Valley Stream, N. Y.
Harvey-Whipple, Inc., 55 Emery St., Springfield, Mass.
Haskins Co., R. G., 615 S. California Ave., Chicago.
Hassall, Inc., John, Clay & Oakland Sts., Brooklyn, N. Y.
Hastings Air Conditioning Company, Inc., Box 474, 108 S. Colorado Ave., Hastings, Nebr.
Hauck Manufacturing Co., 124-136 Tenth St., Brooklyn.
Hauserman Co., E. F., 6800 Grant Ave., Cleveland.
Hays Corp., 782 E. Eighth St., Michigan City, Ind.
Hays Mfg. Co., 801 W. 12th St., Erie, Pa.
Heartley Machine & Tool Co., 900-8 Summit St., Toledo, O.
Heath & Milligan Mfg. Co., Div. of The Glidden Co., 1833 S. Normal Ave., Chicago, Ill.
Heating Assurance, E. 124 Augusta, Spokane, Wash.
Heating Equipment Co., 1123 Harrison St., San Francisco.
Heatlox Furnaces, Inc., 4320 S. Tacoma Way, Tacoma, Wash.
Heatseal Burner Co., 2501 Leavenworth St., Omaha, Nebr.
Hegeler Zinc Co., P. O. Box 599, Danville, Ill.
Heil Co., 3000 W. Montana St., Milwaukee, Wis.
Hemp Co., Macomb, Ill.
Hendley & Whittemore Co., 6 Blackhawk Blvd., Beloit, Wis.
Hendrick Mfg. Co., 37 Dundaff St., Carbondale, Pa.
Henry & Wright Mfg. Co., 760 Windsor St., Hartford, Conn.
●Henry Furnace & Foundry Co., 3473 E. 49th St., Cleveland, O.
Herbert & Sons, T. L., 6th & Harrison St., Nashville, Tenn.
Herbusch Corporation, The, Simplex Control Div., 706 Chestnut St., St. Louis.
Herco Oil Burner Corp., 109 W. Chestnut St., Lancaster, Pa.
Hercules Chemical Co., Inc., 332 Canal St., New York City.
Heremetal Co., 135 Aldrich Ave., N., Minneapolis.
Heritage Stoker Sales, Inc., Coal & Stoker Co., 105 E. 63rd St., Chicago.
Herrmann & Grace Co., 671 Bergen St., Brooklyn, N. Y.
Herron-Zimmers Molding Co., 3900 E. Outer Drive, Detroit.
Hess-Snyder Co., Massillon, Ohio.
Hess Warming & Ventilating Co., 1221-1227 S. Western Ave., Chicago, Ill.
Hetzel Roofing Products Co., 67 Main St., Newark, N. J.
Hexacon Electric Company, 161 W. Clay, Roselle Park, N. J.
Higgin Products, Inc., Newport, Ky.
Hill, E. Vernon, 6826 W. Highland Ave., Chicago, Ill.
Hillwood Manufacturing Co., 21600 St. Clair Ave., Cleveland.
Hilo Varnish Corp., 42-60 Stewart Ave., Brooklyn, N. Y.
Hinde & Dausch Paper Co., P. O. Box 861, Sandusky, O.
Hipoint Corp., Water, Elm & Arnold Sts., Bellefontaine, O.
Hirschman Co., Inc., W. F., 220 Delaware Ave., Buffalo, N. Y.
Hobart Brothers Co., Canal Lock Square, Troy, O.
Hodell Chain Co., 3924 Cooper Ave., Cleveland.
Hodgman Rubber Co., Framingham, Mass.
Hoffman Combustion Eng., Co., 710 Marquette Bldg., Detroit.
Hoffman Specialty Co., Inc., 1001 York St., Indianapolis, Ind.
Holcomb & Hoke Mfg. Co., 1545 Van Buren St., Indianapolis, Ind.
Hollup Corp., Div. National Cylinder Gas Co., 3357 W. 47th Place, Chicago.
Holly Heating & Mfg. Co., 1000 Fair Oaks Ave., So. Pasadena, Cal.
Holtum Mfg. Co., Freeport, Ill.
Holtzer-Cabot Electric Co., 125 Amory St., Boston, Mass.
Home Furnace Co., 6th St. & P. M. R. R., Holland, Mich.
Home Stove Co., 501 Kentucky Ave., Indianapolis, Ind.
Homer Furnace & Foundry Corporation, Coldwater, Mich.
Hones, Inc., Charles A., 122 S. Grand Ave., Baldwin, N. Y.
Hood Co., B. Mifflin, Daisy, Tenn.
Horn Co., A. C., 42-36 Tenth St., Long Island City, N. Y.
Horton Mfg. Co., 3008 University Ave., S. E., Minneapolis.
●Hossfeld Mfg. Co., 460 W. Third St., Winona, Minn.
Hotentot Co., Inc., 2422 Farnam St., Omaha, Nebr.
Hotstream Heater Co., 8007 Grand Ave., Cleveland, O.
Hough Shade Corporation, 1095 S. Jackson St., Janesville, Wis.
Howe & Bassett Co., Inc., 840 University Ave., Rochester, N. Y.
Howe Ice Machine Co., 2825 Montrose Ave., Chicago.
Howell Electric Motors Co., Lock Box 78, Howell, Mich.
Howes-Woods Co., 201 Bridge St., Cambridge, Mass.
Hub Specialty Co., 92 Governor Winthrop Rd., Somerville Mass.
Hubbard Co., 1014 Marquette Ave., Minneapolis, Minn.
Hubbell Corp., 1315 W. Carroll Ave., Chicago.
Hueller Mfg. Co., Inc., H. J., 559 Rogers Ave., Brooklyn, N. Y.
Hugo Mfg. Co., 49th Ave., W. & Superior St., Duluth, Minn.
Hunt & Son, C. B., Box 300, Salem, Ohio.
Hunter Fan & Ventilating Co., Sterick Bldg., Memphis, Tenn.
●Hussey & Co., C. G., 2850 Second Ave., Pittsburgh, Pa.
Huwer Heating Corp., 2375 West Fort St., Detroit.
Huyette Co., Inc., Paul B., Philadelphia.
Hyatt Bearings Division, General Motors Corp., Harrison, N. J.

I

Ice Cooling Appliance Corp., Morrison, Ill.
Ideal Commutator Dresser Co., 1084 Park Ave., Sycamore, Ill.
Ideal Electric & Mfg. Co., E. First & Oak Sts., Mansfield, O.
Ideal Furnace Co., 2995 E. Grand Blvd., Detroit, Mich.
Ideal Heating Corp., 897 East Gage Ave., Los Angeles, Cal.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago, Ill.
Illinois Iron & Bolt Co., 918 S. Michigan Ave., Chicago, Ill.
●Illinois Testing Laboratories, Inc., 412 N. LaSalle St., Chicago, Ill.
Illinois Zinc Co., 2959 W. 47th St., Chicago.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago, Ill.
Imperial Electric Co., 64 Ira Ave., Akron, O.
Imperial Molded Products Corp., 2925 W. Harrison St., Chicago.
Independence Stove & Furnace Co., Cor. Hayward & Cottage, Independence, Mo.
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill.
●Independent Register Co., 3747 E. 93rd St., Cleveland, O.
Indian Trailer Corporation, Koolroom Div., 2338 Indiana Ave., Chicago, Ill.
Industrial Engineering Corporation, Terre Haute, Ind.
Industrial Mfg. & Engineering Co., 3845 N. Ravenswood Ave., Chicago.
Industrial Research, Lansdowne, Pa.
Industrial Sheet Metal Works, Inc., 628 E. Forest Ave., Detroit.
Ingersoll-Rand Co., 11 Broadway, New York City.
Ingersoll Steel & Disc Div., Borg-Warner Corp., 310 S. Michigan Ave., Chicago, Ill.
Inland Steel Co., 38 S. Dearborn St., Chicago, Ill.
Insto-Gas Corporation, 1900 E. Jefferson, Detroit.
Insul-Wool Insulation Corp., Wichita, Kansas.
Insulite Div. Minnesota and Ontario Paper Co., 1100 Builders Exchange Building, Minneapolis.
Inter-Coastal Paint Co., 15th & Southern R. R., East St. Louis, Ill.
International Engineering, Inc., 1145 Bolander, Dayton, O.
International Engineering Wks., Inc., Framingham, Mass.
International Heater Co., 101 Park Ave., Utica, N. Y.
International Moistening Co., 489 S. Main St., Providence, R. I.
International Nickel Co., Inc., 67 Wall St., New York City.
International Register Co., 15 S. Throop St., Chicago.
International Steel Co., 1556 Edgar St., Evansville, Ind.
International Vermiculite Co., 11th & Stanford Ave., Springfield, Ill.
●Interstate Machinery Co., Inc., 1433 W. Pershing Road, Chicago.
Interstate Metal Products Company, Inc., 4401 Ogden Ave., Chicago.
Interstate Sales Co., 1123 Broadway, New York City.
Iona Ventilator Co., Inc., 2821-29 W. Dauphin St., Philadelphia, Pa.
Iowa Foundry Co., W. 2nd & Cook, Sioux City, Ia.
Iowa Paint Mfg. Co., 118-20 Eighth St., Des Moines, Ia.
Iron Fireman Mfg. Co., 3121 W. 106th St., Cleveland.
Iwan Brothers, 1503 Prairie Ave., South Bend, Ind.

J

Jackson-Bangor Slate Co., Pen Argyl, Pa.
●Jackson & Church Co., 321 N. Hamilton St., Saginaw, Mich.
Jackson Oil Burner Co., 4385 Pacific Ave., Detroit.
Jackson Sheet Metal Works, 3012 Washington Ave., Ogden, Utah.
Jacobs Co., B. & J., 1725 Johns St., Cincinnati, O.
Jacobson Machine Works, Inc., A. E., 1090 Tenth Ave., S. E., Minneapolis, Minn.
Jaden Mfg. Co., Inc., F., 1601 W. 2nd St., Hastings, Nebr.

Jamar Co., Walker, 367 S. First Ave., E., Duluth, Minn.
James Regulator Co., Inc., Peacock St., Pottsville, Pa.
Jamestown Metal Corp., Jamestown, N. Y.
Jamieson Mfg. Co., 820 Eagle Ford Road, Dallas, Texas.
Janette Mfg. Co., 556 W. Monroe St., Chicago, Ill.
Jefferson Electric Co., 25th & Madison St., Bellwood, Ill.
Jefferson Machine Tool Co., Fourth, Cutter & Sweeney Sts., Cincinnati, Ohio.
Jelliff Mfg. Corp., C. O., Southport, Conn.
Jessop Steel Co., Lock Box 489, Washington, Pa.
Jewel Mfg. Co., 1874 Highland Parkway, St. Paul.
Jiffy Manufacturing Co., Hillside, N. J.
Jiggers, Inc., 215 W. Illinois St., Chicago.
Joal Mfg. Corp., 2058 Canton St., Toledo.
Johns-Manville, 22 E. 40th St., New York City.
Johnson Bronze Co., S. Mill St., New Castle, Pa.
Johnson Co., Lloyd S., 2241 Indiana Ave., Chicago.
Johnson Co., S. T., 940 Arlington Ave., Oakland, Cal., and 401 N. Broad St., Philadelphia, Pa.
Johnson Fan & Blower Corp., 1319 W. Lake St., Chicago, Ill.
●Johnson Gas Appliance Co., 520 "E" Ave., N. W., Cedar Rapids, Ia.
Johnson, Inc., William, Brenner & Kent Sts., Newark, N. J.
Johnson Ladder & Shoe Co., Eau Claire, Wisconsin.
Johnson Mfg. Co. Tenth & Sycamore, Waterloo, Ia.
Johnson Service Co., 507 E. Michigan St., Milwaukee, Wis.
Johnston & Chapman Co., 2925 Carroll Ave., Chicago, Ill.
Johnston Co., Wm. W., 115 Bayard St., Dayton, O.
Johnston Gas Furnace Corp., 11847 Vose St., North Hollywood, Cal.
Johnston Tin Foil & Metal Co., 6100 S. Broadway, St. Louis.
Joliet Heating Corp., 1403 Herkimer St., Joliet, Ill.
Jones & Laughlin Steel Corp., Third Ave. & Ross St., Pittsburgh, Pa.
Jones Foundry & Machine Co., W. A., 4401 W. Roosevelt Rd., Chicago, Ill.
Jones Products Corporation, Ferndale, Mich.
Jordan & Co., Paul R., 631 S. Delaware St., Indianapolis, Ind.
Juniper Elbow Company, Inc., 72-15 Metropolitan Ave., Middle Village, L. I., N. Y.

K

Kais Sunrise Works, 5659 Linwood Ave., Detroit, Mich.
Kaiser Co., H. S., 3336 Franklin Blvd., Chicago.
Kane Mfg. Corporation, Lock Box 81, Kane, Pa.
Katelman Foundry & Mfg. Co., Third Ave. & Eleventh St., Council Bluffs, Iowa.
Kauffman Air Conditioning Corp., 4336 W. Pine St., St. Louis, Mo.
Kaustine Co., Inc., Perry, N. Y.
Kawneer Co., Niles, Mich.
Kaybar Burner Corp., 4545 Cottage Grove Ave., Chicago, Ill.
Keasbey Co., Robert A., 139 W. 19th St., New York City.
Keasbey & Mattison Co., Butler Ave., Ambler, Pa.
Kehm Corporation, 441 N. LaSalle St., Chicago.
Keith Furnace Co., Dean Ave. at E. 26th, Des Moines, Ia.
Keldur Corp., 420 Lexington Ave., New York City.
Keller, Inc., Wm. H., P. O. Box 268, Grand Haven, Mich.
Kelley Manufacturing Co., P. O. Box 17, Houston, Texas.
Kelsey Heating Co., Inc., 277 James St., Syracuse, N. Y.
Kelvinator Division, Nash-Kelvinator Corp., 14250 Plymouth Rd., Detroit.
Kelvin-White Co., 90 State St., Boston.
Kennard, Inc., Sam, 3331-3339 Market St., St. Louis.
Kennedy, Inc., David E., 58 Second Ave., Brooklyn, N. Y.
Kent Co., Inc., 167 Canal St., Rome, N. Y.
Kent Co., Inc., J. King, 6477 Manchester Ave., St. Louis.
Kerentoff, G. L., 2803 Jefferson Ave., Cincinnati.
Kernchen Co., 333 N. Michigan Ave., Chicago, Ill.
Kester Solder Co., 4201 Wrightwood Ave., Chicago, Ill.
Kewanee Boiler Corporation, Franklin St. & "Q" Tracks, Kewanee, Ill.
Keystone Asphalt Products Co., 43 E. Ohio St., Chicago.
Keystone-Carbon Co., Inc., St. Marys, Pa.
Kidder Mfg. Co., Inc., J. F., 426 Colchester Ave., Burlington, Vt.
Kimberly-Clark Corp., 8 S. Michigan Ave., Chicago.
King Metal Co., 414 N. W. Fourth St., Oklahoma City, Okla.
King Ventilating Co., Box 178, Owatonna, Minn.
Kingston Products Corporation, 1415 N. Webster, Kokomo, Ind.
Kinnear Mfg. Co., P. O. Box 598, Columbus, O.
Kirk & Blum Mfg. Co., 2820 Spring Grove Ave., Cincinnati, O.
Kitson Co., 1500 Walnut St., Philadelphia, Pa.
Klauer Mfg. Co., 9th & Washington St., Dubuque, Ia.
Kleenaire Corp., 409 Jefferson St., Stevens Point, Wis.
Kleen-Heet, Inc., 1823 Carroll Ave., Chicago, Ill.
Klein Stove Co., Trenton Ave. & Tioga St., Philadelphia, Pa.
Klenk's Aviation Snips, 107 E. 5th St., Wilmington, Del.
●Klomparens Lock-Joint Co., 3015 Military Rd., Arlington, Va.
Kluegel & Co., E., 187 W. Kellogg Blvd., St. Paul, Minn.
Knickerbocker Co., 603 Liberty St., Jackson, Mich.
Knowles Mushroom Ventilator Co., 11 Label St., Montclair, N. J.
Kol-Master Corp., Oregon, Ill.
Koons Furnace Co., 219 W. Van Buren, Danville, Ill.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Korfund Co., Inc., 48-15 32nd Pl., Long Island City, N. Y.
Korth Oil Burner Corp., 123 Hawthorne St., Roselle Park, N. J.
Kraissl Co., Inc., Terhune & Williams Aves., Hackensack, N. J.
Kraker, Henry, 54 W. 14th St., Holland, Mich.
Kramer Bros. Foundry Co., Dayton, Ohio.
Kramer Trenton Co., 626 Brunswick Ave., Trenton, N. J.
Krehbiel Co., J. H., 425 N. Crawford Ave., Chicago, Ill.
Kruse Company, 353 W. 16th Pl., Indianapolis, Ind.
Kruse & Dewenter Co., 427-429 E. Washington St., Indianapolis, Ind.

L

Laclede-Christy Clay Products Co., 411 N. Seventh St., St. Louis, Mo.
Laclede Steel Co., 1317 Arcade Bldg., St. Louis, Mo.
Laco Oil Burner Co., 238 Union St., Griswold, Ia.
La Crosse Steel Roofing & Corrugating Co., 227 Jay St., La Crosse, Wis.
Ladon Co., 902 S. Wabash Ave., Chicago.
Lamb & Ritchie Co., 250 Albany St., Cambridge, Mass.
Lamneck Products, Inc., 1025 Lamneck St., Middletown, Ohio.
Lamson & Sessions Co., 1971 W. 85th St., Cleveland.
Landwehr Heating Corp., 6th & Cayuga Sts., Philadelphia.
Langsenkamp Co., F. H., 229 E. South St., Indianapolis, Ind.
Larkin Coils, Inc., 519 Fair St., S. E., Atlanta, Ga.
Lastik Products Co., Inc., 1106 Keenan Bldg., Pittsburgh, Pa.
Lau Blower Co., 2005 Home Ave., Dayton, O.
Layne & Bowler, Inc., University and Chelsea, Memphis, Tenn.
Leach Co., 412 S. Main St., Oshkosh, Wis.
●Leader Iron Works, Inc., 2841 N. Jasper St., Decatur, Ill.
Leahy Manufacturing Co., 1304 E. 8th St., Los Angeles.
Lecourtenay Co. 5 Maine St., Newark, N. J.
Ledkote Products Co., 35-01 Vernon Blvd., Long Island City, N. Y.
Lee Co., K. O., P. O. Box 35, Aberdeen, S. D.
Lee & Son, Thomas, 128-132 W. Second St., Cincinnati, O.
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.
Lees, John, Div., Serrick Corp., Muncie, Ind.
Leeson Air Conditioning Corporation, 14631 Meyers Rd., Detroit, Mich.
Leffel & Co., James, 426 East St., Springfield, O.
Lehigh Fan & Blower Co., Front & Linden Sts., Allentown, Pa.
Lehon Company, 4411 Oakley Ave., Chicago.
Leland Electric Co., Inc., 1501 Webster St., Dayton, O.
Lenk Mfg. Company, Newton Lower Falls, Mass.
Lennox Furnace Co., 200 S. 12th Ave., Marshalltown, Iowa; 1705 Olentangy River Rd., Columbus, Ohio; 400 N. Midler Ave., Syracuse, N. Y.
Leslie Welding Co., 2943 Carroll Ave., Chicago.
Levow, David, 308 W. 20th St., New York City.
Levy Bros. Company, 2334-2246 E. 38th St., Los Angeles.
Lewellen Mfg. Co., Columbus, Ind.
Lewin-Mathes Company, Lewin Metals Div., 12th & Chateau Sts., St. Louis.
Lewis & Co., Inc., Chas. S., 2207 Pine St., St. Louis, Mo.
Libbey-Owens-Ford Glass Co., Box 919, Toledo, O.
●Libert Machine Co., 324 N. Roosevelt St., Green Bay, Wis.
Lignum-Vitae Products Corp., 96 Boyd Ave., Jeresey City, N. J.
Lincoln Electric Co., 12818 Coit Rd., Cleveland, O.
Linde Air Products Co., The, 30 E. 42nd St., New York City.
Linderme Machine & Tool Co., Inc., 12233 Coyle Ave., Detroit.
Linear Packing & Rubber Co., Inc., State Road & Levick St., Philadelphia.
Link-Belt Co., Stoker Div., 2410 W. 18th St., Chicago, Ill.
Lion Mfg. Corp., 2640 W. Belmont Ave., Chicago.
Liquefied Gas Appliance Co., Mars, Pa.
Lissberger & Son, Inc., Marks, 23-01 Borden Ave., Long Island City, N. Y.
Little Burner Co., Inc., H. C., 2nd & Lincoln, San Rafael, Cal.
Little Janitor Furnace Clock Co., 621 Broadway, New York City.
Littleford Bros., Inc., 457 E. Pearl St., Cincinnati, O.
Livingston Repair, South Fountain St., Marshall, Mich.
Lochinvar Products Division of Michigan Tank & Furnace Corp., 14101 Prairie Ave., Detroit.
●Lockformer Co., 4615 Arthington St., Chicago, Ill.
Lockjoint Wood Products Co., 1721 Mildred St., Wichita, Kan.
Logan-Long Co., 37 W. Van Buren St., Chicago, Ill.
Lohman, Inc., William J., 1206 S. Grove St., Irvington, N. J.
Lonergan Manufacturing Co., Albion, Mich.
Lookout Boiler & Mfg. Co., Manufacturers Road, Chattanooga, Tenn.
Lord Mfg. Co., 1641 W. 12th St., Erie, Pa.
Lovejoy Flexible Coupling Co., 5001 W. Lake St., Chicago.

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Lowell Air Conditioning Corp., Otis Building, Philadelphia.
Lucas & Company, Inc., John, 322 Race St., Philadelphia.
Ludowici-Celadon Co., 104 S. Michigan Ave., Chicago.
Lukens Metal Co., Thos. F., Hedley & Bath Sts., Philadelphia.
Lukens Steel Co., 308 S. First Ave., Coatesville, Pa.
Lyman Co., H. B., Southampton, Mass.
Lyon Conklin & Co., Inc., Race & McComas St., Baltimore.

M

Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.
McClure Builders' Supply Co., 68 E. Clark St., East Palestine, O.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit.
McCorkle Co., D. H., Sixth & Bancroft Way, Berkeley, Cal.
McDonnell & Miller, 400 N. Michigan Ave., Chicago, Ill.
McKay Co., York, Pa.
McLeod & Henry Co., Inc., 395A First St., Troy, N. Y.
McLouth Air Conditioning Corporation, 2400 E. Michigan Ave., Lansing, Mich.
McPherson Furnace & Supply Co., 1805 N. E. 2nd Ave., Portland, Ore.
McQuay, Inc., 1600 Broadway, N. E., Minneapolis, Minn.
MaGirl Foundry & Furnace Works, P. H., 401-413 E. Oakland Ave., Bloomington, Ill.
Magnet Switch Co., 340 W. Huron St., Chicago.
Mahon Co., R. C., 8650 Mt. Elliott Ave., Detroit, Mich.
Maid-O'-Mist, Inc., 215 N. Aberdeen St., Chicago, Ill.
Main Cornice Works, 1416 N. Main St., Los Angeles.
Majestic Co., 733 Erie St., Huntington, Ind.
Majestic Flashing Company, Reisterstown Rd. at Elgin Ave., Baltimore.
Majestic Furnace Co., 1723 Westlake Ave. N., Seattle, Wash.
Malco Gear Co., 13904 Lincoln Ave., Dolton, Ill.
Mall Tool Company, 7740 South Chicago Ave., Chicago, Ill.
Malleable Iron Fittings Co., Branford, Conn.
Mallory Sales Co., 13904 Lincoln Ave., Dolton, Ill.
Manhattan Perforated Metal Co., Inc., 43-17 37th St., Long Island City, N. Y.
Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., 61 Willett St., Passaic, N. J.
Manheim Manufacturing and Belting Co., Manheim, Pa.
Manley Products Corp., State & Hay Sts., York, Pa.
Manning, Maxwell & Moore, Inc., American Schaeffer & Budenberg Instrument Div., 11 Elias St., Bridgeport, Conn.
Manufacturer's Fin Coil Co., 2505 S. Pulaski Rd., Chicago.
Manufacturers Successors, Inc., 150 Broadway, New York City.
Maple City Furnace Co., 605 S. Main St., Monmouth, Ill.
Maple City Stamping Co., Peoria, Ill.
Maple Valley Mfg. Co., First St., Mapleton, Ia.
Maplewood Machinery Co., 2634 Fullerton Ave., Chicago.
Marathon Electric Mfg. Corp., Cherry & Randolph Sts., Wausau, Wis.
Marblehead Lime Co., 160 N. LaSalle St., Chicago.
Marble-Card Electric Co., Gladstone, Mich.
Marion Furnace Co., 1441 Brooklyn Ave., Detroit.
Marion Machine, Foundry & Supply Co., P. O. Box 685 Marion, Ind.
Marley Chemical Co., 6537 Russell St., Detroit.
●Marley Co., 3001 Fairfax Rd., Kansas City, Kan.
Marlin-Rockwell, Jamestown, N. Y.
Marlo Coil Company, 6135 Manchester Ave., St. Louis.
Marquette Mfg. Co., Inc., 401-409 Johnson St., N. E., Minneapolis, Minn.
Marsh Corporation, Jas. P., 2073 Southport Ave., Chicago.
Marsh Lumber Co., Inc., 535-611 Tuscarawas Ave., Dover, Ohio
Marshall Furnace Co., Dobbins & Hanover Sts., Marshall, Mich.
Marshallan Mfg. Co., 1061 W. 11th St., Cleveland.
●Marshalltown Mfg. Co., 901 E. Nevada St., Marshalltown, Ia.
Martin, J. O., and C. U., 647 Minna St., San Francisco
Martin Metal Mfg. Co., 900 E. 2nd St., Wichita, Kan.
Martin-Parry Corp., W. Market St., York, Pa.
Martocello & Co., Jos. A., 229 N. 13th St., Philadelphia, Pa.
Mason-Neilan Regulator Co., 435 N. Michigan Ave., Chicago.
Mason & Sons, F. E., Batavia, N. Y.
Masonite Corp., 111 W. Washington St., Chicago, Ill.
Master Electric Co., 126 Davis Ave., Dayton, O.
Matthiessen & Hegeler Zinc Co., LaSalle, Ill.
Mauer Engineering, 2525 Colfax St., Evanston, Ill.
Maurath, Inc., 7309 Union Ave., Cleveland, O.
●Maurey Mfg. Corp., 2915 S. Wabash Ave., Chicago.
Maxfield Manufacturing Co., 519 S. Main St., Temple, Tex.
●May-Fiebeger Co., S. 21st St., Newark, O.
●Mayflower Air Conditioners, Inc., 5th Floor, Finch Industrial Bldg., 5th & Wacouta, St. Paul.
Mayflower Oil Burner Corp., 5002 Hudson Blvd., West New York, N. J.
●May Oil Burner Corp., Maryland Ave. & Oliver St., Baltimore, Md.
Maysteel Products, Inc., Horicon St., Mayville, Wis.
Maze Co., W. H., 2500 S. Water St., Peru, Ill.
Medart Co. 3500 DeKalb St., St. Louis, Mo.
Meier Electric & Machine Co., 3525 E. Washington St., Indianapolis, Ind.
Mellish & Murray Co., 1715 Carroll Ave., Chicago, Ill.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa.
●Mercoid Corp., 4201 Belmont Ave., Chicago, Ill.
Mercury Clutch Corporation, 637 W. Third St., Massillon, O.
Meriam Co., 1985 W. 112th St., Cleveland.
Merkle-Korff Gear Co., 217 N. Morgan St., Chicago.
Mesker & Co., Geo. L., 400 N. W. First St., Evansville, Ind.
Metal Door & Trim Co., La Porte, Ind.
Metal Marker Co., 1380 E. 40th St., Cleveland, O.
Metal & Thermit Corp., 120 Broadway, New York City.
Metropolitan Refining Co., 23 50th Ave., Long Island City, N. Y.
Metzner Stove Repair Co., 515 Wyandotte, Kansas City, Mo.
●Meyer & Bro. Co., F., 1313 S. Adams St., Peoria, Ill.
●Meyer Furnace Co., 1300 S. Washington St. Peoria, Ill.
Meyer Mfg. Co., 2536 Fourteenth St., Detroit.
Meyers Fuel Saver Co., Inc., 313 W. Milwaukee St., Janesville, Wis.
Micheli Air Conditioning Co., Inc., 1725 State St., Schenectady, N. Y.
Michigan Tank & Furnace Corp., 14101 Prairie Ave., Detroit, Mich.
Micro Products Co., 20 N. Wacker Dr., Chicago.
Middleton Mfg. & Sales Co., 125 N. First St., Minneapolis.
Midland Paint & Varnish Co., 9115 Reno Ave., Cleveland.
Midwest Aluminum Products, Inc., 123 E. Pittsburgh Ave., Milwaukee, Wis.
Midwestern Supply Co., 314 Stanley Terrace, Chicago.
Milburn Co., Alexander, 1426 W. Baltimore St., Baltimore.
Milcor Steel Co., 4117 W. Burnham St., Milwaukee, Wis.
Miller Co., Meridan, Conn.
Miller-Connell Mfg. Co., Inc., 222 W. North Bank Dr., Chicago.
●Miller & Doing, Inc., 58 York St., Brooklyn, N. Y.
Miller & Son, C. Arthur, 202-204 S. Main St., Elmira, N. Y.
Miller Electric Mfg Co., Inc., 905 N. Meade St., Appleton, Wis.
Miller Floor Furnace Co., 741 E. 14th St., Oakland, Cal.
Millers Falls Co., 57 Wells St., Greenfield, Mass.
Mill-Rose Co., 2498 E. 79th St., Cleveland, O.
Mills Novelty Co., 4110 W. Fullerton Ave., Chicago, Ill.
Milwaukee Brush Mfg. Co., 2236 N. 30th St., Milwaukee.
Milwaukee Gas Specialty Company, 2025 W. Clybourn, Milwaukee.
Mineral Insulation Co., 103rd & South West Highway, Chicago Ridge, Ill.
●Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave., S. Minneapolis, Minn.
Minn-Kota Foundry & Mfg. Co., 201 Second St., N. Fargo, N. D.
Minster Machine Co., Minster, O.
Misener Mfg. Co., Inc., 326 E. Washington St., Syracuse, N. Y.
Mississippi Glass Company, 220 Fifth Ave., New York City.
Mission Water Heater Co., 7101 McKinley Ave., Los Angeles.
Mitchell Moulding Co., 1501 Circle Ave., Forest Park, Ill.
Mitchell & Smith, Incorporated, Mineral Felt, Div., 2288 Albion St., Toledo, Ohio.
Modern Engineering Co., 3411 Pine Blvd., St. Louis, Mo.
ModernAire Co. Div. Des Moines Stove Repair Co., 107 S. W. Second St., Des Moines, Iowa.
Modine Mfg. Co., 17th St., Racine, Wis.
Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill, N. Y.
Moeschl-Edwards Corrugating Co., Inc., P. O. Box 1115, Cincinnati.
Mohler Co., J. K., The, 151 Church Ave., Ephrata, Pa.
Mojonnier Brothers Co., 4601 W. Ohio St., Chicago.
Monarch Engineering Company, 500-600 Linden Ave., Dayton, Ohio.
Monarch Furnace Fittings Manufacturers, 4040 W. Lake St., Chicago.
Monarch Heating Co., 4661 Alger St., Los Angeles.
Monarch Mfg. Works, Inc., Salmon & Westmoreland Sts., Philadelphia, Pa.
Moncrief Furnace Co., P. O. Box 1673, Atlanta, Ga.
Moncrief Furnace & Manufacturing Co., Inc., 3903 Main St., Dallas, Texas.
Monitor Controller Co., 51 S. Gay St., Baltimore, Md.
Monmouth Products Co., 1929-41 East 61st St., Cleveland, O.
Monogram Combustion Chamber Co., 3645 Cuthbert St., Philadelphia.
Montag Stove & Furnace Works, 2011 N. Columbia Blvd., Portland, Ore.
Montgomery Brothers, 61 Fremont St., San Francisco, Cal.
Moore Corp., Benton St., Joliet, Ill.
Moran Flexible Steam Joint Co., 217 W. Main St., Louisville, Ky.
Morey, Dan, 816 S. Robertson Blvd., Los Angeles.
Morris Machine Works, 31 E. Genesee St., Baldwinsville, N. Y.
●Morrison Products, Inc., 16816 Waterloo Rd., Cleveland.
Morrison Steel Products, Inc., 601 Amherst St., Buffalo, N. Y.
Morse Chain Co., Ithaca, N. Y.

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Mortell Co., J. W., Hobbie Ave & Big Four R. R., Kankakee, Ill.
Motex Metal Process Corporation, 4473-4475 W. Jefferson Ave., Detroit.
Motorstoker Div. Hershey Machine & Foundry Co., Manheim, Pa.
Mountain States Equipment Co., 1238 Speer Blvd., Denver, Colo.
•Mt. Vernon Furnace & Mfg. Co., P. O. Box 213, Mt. Vernon, Ill.
Mueller Brass Co., Lapeer Ave., Port Huron, Mich.
Mueller Co., 512 W. Cerro Gordo St., Decatur, Ill.
•Mueller Furnace Co., L. J., 2005 W. Oklahoma Ave., Milwaukee, Wis.
Mullins Mfg. Corp., Warren, O.
Multi-Cell Sales Corp., 3420 Nicollet Ave., Minneapolis.
Muncie Gear Works, Inc., 700 N. Wysor, Muncie, Ind.
Mundet Cork Corp., 65 S. 11th St., Brooklyn, N. Y.
Mundt & Sons, Charles, 53 Fairmount Ave., Jersey City, N. J.
Munn and Steele, Inc., 130 Lister Ave., Newark, N. J.
Murray Co., 3200 Canton Ave., Dallas, Tex.
Murray Corporation of America, 7700 Russell St., Detroit.
Murray Manufacturing Co., D. J., 1002-24 Third St., Wausau, Wis.
Murray Tile Co., Cloverport, Ky.
Myers & Bro. Co., The F. E., Ashland, O.
Myers Electric Co., 410 Third Ave., Pittsburgh, Pa.
Myers Ladder Equipment Co., 3121 Buena Vista, Madison, Wis.

N

Nash Engineering Co., Wilson Ave., South Norwalk, Conn.
National Airoil Burner Co., Inc., 1284 E. Sedgley Ave., Philadelphia.
National Brass & Copper Co., Inc., P. O. Box 365, Lisbon, Ohio.
National Cylinder Gas Co., 205 W. Wacker Dr., Chicago.
National Engineering & Manufacturing Co., 213 W. 19th St., Kansas City, Mo.
National Engineering Products, Inc., Commerce & Savings Bldg., Washington, D. C.
National Fireproofing Corp., 202 E. Ohio St., N. S., Pittsburgh, Pa.
National Foundry & Furnace Co., Station "B," Dayton, O.
National Gypsum Co., Delaware Ave., Buffalo, N. Y.
National Iron Works, Foot of 7 Ave., San Diego, Cal.
National Lead Co., 111 Broadway, New York City.
National Lock Co., Inc., Rockford, Ill.
National Machine Tool Co., 1536 Clark St., Racine, Wis.
National Machine Works, 122 S. Michigan Ave., Chicago, Ill.
National Mfg. Corp., 151 Fillmore Ave., Tonawanda, N. Y.
National Manufacturing & Engineering Co., 1441 Brooklyn Bldg., Detroit.
National Safety Device Co., 836 W. Hubbard St., Chicago.
National Screw & Mfg. Co., 2440 E. 75th St., Cleveland, O.
National Sheet Metal Co., 1617-1629 Water St., Peru, Ill.
National Stainless Clip Corporation, 51 Chambers St., New York City.
National Steam Pump Co., 701 W. Johnson St., Upper Sandusky, O.
National Super Service Co., 1944 N. 13th St., Toledo, O.
National Time & Signal Corp., 600 E. Milwaukee, Ave., Detroit.
Nebel Manufacturing Co., P. O. Box 3942, Shaker Sq. Station, Cleveland.
Neemes Foundry, Inc., 286 First St., Troy, N. Y.
Neilson Chemical Co., 6564 Benson St., Detroit.
Nelson Co., 2604 4th Ave., Detroit, Mich.
Nelson Mfg. Co., B. F., 401 Main St., N. E., Minneapolis.
Nesbitt, Inc., John J., State Rd. & Rhawn St., Philadelphia.
Nevinger Manufacturing Co., Inc., Greenville, Illinois.
New-Aire Blower Co., 23768 Michigan Ave., Dearborn, Mich.
New Albany Machine Mfg. Co., E. 10th & Water Sts., New Albany, Ind.
New Delphos Mfg. Co., 102-124 S. Pierce St., Delphos, O.
New Departure, Div. General Motors Sales Corp., Bristol, Conn.
New Haven Copper Co., Seymour, Conn.
New Jersey Zinc Co., 160 Front St., New York City.
Newman Brothers, Inc., 662-670 W. 4th St., Cincinnati, Ohio.
New Mission Htg. & Vent. Co., 3401 Mission St., San Francisco.
New Monarch Machine & Stamping Co., 406 S. W. 9th St., Des Moines, Ia.
Newport Rolling Mill Co., Div. Andrews Steel Co., 9th & Lowell Sts. Newport, Ky.
New Way Products Company, 955 Spitzer Bldg., Toledo.
New York Blower Co., 3155 Shields Ave., Chicago, Ill.
Niagara Blower Co., 6 E. 45th St., New York City.
•Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo, N. Y.
Nice Ball Bearing Co., 30th & Nicetown Lane, Philadelphia.
Nicholson & Co., W. H., 12 Oregon St., Wilkes-Barre, Pa.
Nielco Chemical Co., 6564 Benson St., Detroit.
Niles Rolling Mill Co., Niles, O.
Niles Steel Products Division, Republic Steel Corp., 46b Walnut St., Niles, Ohio.
Norge Heating & Conditioning Div., Borg-Warner Corp., 670 E. Woodbridge St., Detroit, Mich.
Norma-Hoffman Bearings Corp., Stanford, Conn.
Norman Sheet Metal Mfg. Co., W. F., 212-236 N. Cedar St., Nevada, Mo.
Norris Painting Machinery Corp., 96 Greenwich Ave., Greenwich, Conn.
Norristown Magnesia & Asbestos Co., Washington St., Below Ford St., Norristown, Pa.
North American Fibre Products Co., National Building, Cleveland.
North Bangor Slate Co., Bangor, Pa.
Northern Blower Co., 6409 Barberton Ave., Cleveland, O.
Northern Furnace & Supply Co., 25th St. & 2nd Avenue North, Billings, Mont.
Northern Steel & Stoker Corp., 3100 Prospect Rd., Peoria, Ill.
Northern Weatherstrip Co., 367 S. 1st Ave., E., Duluth, Minn.
Northwest Lead Company, 2700 16th Ave., S. W., Seattle, Wash.
Northwest Stove & Furnace Works, 2345 S. E. Gladstone St., Portland, Ore.
•Northwestern Stove Repair Co., 662 W. Roosevelt Rd., Chicago, Ill.
Nortmann-Duffke Co., 2740 S. 32nd St., Milwaukee, Wis.
Norton Brothers, 44 Main St., Greenville, N. Y.
Norwin Co., East Album St., Freeport, Ill.
Norwood Filtration Co., N. Maple St., Florence, Mass.
Nugent Furnaces, Thos., 223 E. 80th St., New York City.
NuSteel Company, 1714 S. Ashland Ave., Chicago.
Nu-Way Corp., The, 2416 Fourth Ave., Rock Island, Ill.

O

Oakland Foundry Co., Avenue A & L & N Tracks, Belleville, Ill.
O'Brien Varnish Co., 101 N. Johnson St., South Bend, Ind.
Ohio Brass Co., N. Main St., Mansfield, Ohio.
Ohio Electric Mfg. Co., 5910 Maurice Ave., Cleveland, O.
Ohio Foundry and Manufacturing Co., Steubenville, O.
Ohio Products Co., 16507 Lucille Ave., Cleveland, O.
Ohio Wire Products Co., 217 N. Tusc. Ave., Dover, Ohio.
Ohl & Co., Geo. A., 151-161 Oraton St., Newark, N. J.
Ohmiac Paint & Refining Co., 6550 S. Central Ave., Chicago.
Oil Devices, 341 E. Ohio St., Chicago.
O'Keefe & Merritt Co., 3700 E. Olympic Blvd., Los Angeles.
•Olsen Manufacturing Co., The C. A., Elyria, O.
Omaha Stove Repair Works, 1206 Douglas St., Omaha, Nebr.
O'Neil Irwin Manufacturing Co., 316 Eighth Ave., S., Minneapolis.
Orbon Stove Co., L. & N. and Sycamore St., Belleville, Ill.
Original Metal Forming Machine Co., 952 Twentieth Ave., Seattle, Wash.
Ormsby-Osterman Company, 3631 Cass Ave., St. Louis.
•Osborn Co., J. M. & L. A., 1541 E. 38th St., Cleveland, O.
Osborn Mfg. Co., 5401 Hamilton Ave, Cleveland, O.
Otis Steel Co., 3341 Jennings Rd., Cleveland, O.
OverSpred Stoker Co., Fulton, Jackson & Jefferson Sts., Ottawa, Ill.
•Owens-Corning Fiberglas Corp., Nicholas Bldg., Toledo, O.
Ozone Air Company, 928 Cherry St., S. E., Grand Rapids, Mich.
Oxo-Ray Process Corp., 400 N. Sangamon St., Chicago.

P

Pacific Airmax Corporation, 7631 Roseberry Ave., Huntington Park, Calif.
Pacific Gas Heating Co., 2948 Twentieth St., San Francisco.
Pacific Lumber Co., 100 Bush St., San Francisco, Cal.
Pacific Pump Works, 5716 Bickett St., Huntington Park, Calif.
Pacific States Felt & Mfg. Co., Inc., 845 Howard St., San Francisco.
Packham Crimper Co., Oak St. & N. Y. C. Depot, Mechanicsburg, O.
Packless Metal Products Corp., 31 Winthrop Ave., New Rochelle, N. Y.
Page Steel & Wire Div. of American Chain & Cable Co., Inc., Monessen, Pa.
Paine Company, 2951 W. Carroll Ave., Chicago.
Paint-Point Corporation, 275 Passaic St., Newark, N. J.
Palmer Co., 2501 Norwood Ave., Norwood, Cincinnati, O.
Palmer Electric Co., 20 Sproat St., Detroit, Mich.
Palmer Mfg. Co., 3890 E. 91st St., Cleveland.
Palmer Manufacturing Corp., Phoenix, Ariz.
Pan-American Engineering Company, 820 Parker St., Berkeley, Cal.

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Pangborn Corp., Pangborn Blvd., Hagerstown, Md.
Paragon Electric Co., 37 W. Van Buren St., Chicago, Ill.
Paragon Oil Burner Corp., 75 Bridgewater St., Brooklyn, N. Y.
Paramount Products Co., 545 Fifth Ave., New York City.
Park City Cornice Works, Inc., 56 McKinley Ave., Bridgeport, Conn.
Parker Appliance Co., 17325 Euclid Ave., Cleveland.
Parker Heating & Manufacturing Co., 1627 Third Ave., S., St. Petersburg, Fla.
●Parker-Kalon Corp., 190-192 Varick St., New York City.
Parker Rust-Proof Co., 2169 E. Milwaukee Ave., Detroit.
Parkersburg Iron & Steel Co., Drawer 1070, Parkersburg, W. Va.
Parks-Cramer Co., P. O. Box 444, Fitchburg, Mass.
Patten Co., J. V., 200 DeKalb Ave., Sycamore, Ill.
Patterson Foundry & Machine Co., East Liverpool, O.
Patterson-Sargent Co., St. Clair, Kopp & 38th St., Cleveland.
Patterson Shade Co., 1525 N. Meridian St., Indianapolis, Ind.
●Payne Furnace & Supply Co., 336 N. Foothill Rd., Beverly Hills, Cal.
Peacard Co.,. M. A., 195 Dudley St., Roxbury Sta., Boston.
●Peck, Stow & Wilcox Co., Center St., Southington, Conn.
Pecora Paint Co., 4th St. & Erie Ave., Philadelphia, Pa.
Peerless Electric Co., 2000 W. Market St., Warren, O.
●Peerless Foundry Co., 1853 Ludlow Ave., Indianapolis, Ind.
Peerless Mfg. Corp., 1400 W. Ormsby St., Louisville, Ky.
Peerless of America, Inc., Marion, Indiana.
Peerless Oil Burner Co., Inc., 3926 Main St., Kansas City, Mo.
Peerless Pump Div., Food Machinery Co., 301 West Avenue 26, Los Angeles, Cal.
Peerless Pump Div., Food Machinery Corporation, 1250 Camden Ave., Canton, Ohio.
Peninsular Stove Co., 2699 Gratiot Ave., Detroit, Mich.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
●Penn Electric Switch Co., Box 556, Goshen, Ind.
Penn Tool Company, 2415 N. Howard St., Philadelphia.
Penn Ventilating Co., 3252 Goodman St., Philadelphia.
Pennsylvania Engineering Works, 526 S. Jefferson St., New Castle, Pa.
Pennsylvania Flexible Metallic Tubing Co., 72nd St. & Powers Lane, Philadelphia.
Pennsylvania Furnace & Iron Co., P. O. Box 269, Warren, Pa.
Pennsylvania Wire Glass Co., 1612 Market St., Philadelphia.
Pentecost & Craft Co., 429 Wabash Ave., Terre Haute, Ind.
Perfection Grate & Stoker Co., 4 Fisk Ave., Springfield, Mass.
Perfection Stove Co., 7609 Platt Ave., Cleveland, O.
Perfex Corp., 500 W. Oklahoma Ave., Milwaukee, Wis.
Perham Products, Inc., 133 N. Wacker Drive, Chicago.
Perkins Machine Co., 4 Perkins Ave., Warren, Mass.
Perkins Machine Gear Co., Springfield, Mass.
Perkins & Son, Inc., B. F., Chicopee St., Holyoke, Mass.
Perkinson & Brown, 412 N. Wolcott Ave., Chicago.
Permutit Co., 330 W. 42nd St., New York, N. Y.
Pernot & Rich, Inc., 2546 San Fernando Rd., Los Angeles.
Peterson "Freesem" Mfg. & Sales Co., 316 Southwest Blvd., Kansas City, Mo.
Petroleum Heat & Power Co., Stamford, Conn.
●Pfanstiehl Chemical Co., 104 Lakeview Ave., Waukegan, Ill.
Pfeifer, Wm., 416 Greenwich St., New York City.
Pfening Co., Fred D. 1075 W. 5th Ave., Columbus, O.
Phelps Dodge Copper Products Corp., British American Tube Div., 40 Wall St., New York City.
Pheins Mfg. Co., 801 Thomas St., Little Rock, Ark.
Pheoll Manufacturing Co., 5700 Roosevelt Rd., Chicago.
Philadelphia Gear Co., Erie Ave. & G St., Philadelphia.
Philadelphia Thermometer Co., 915 Filbert St., Philadelphia.
Philco Radio & Television Corp., Tioga and C Streets, Philadelphia.
Phillips Cooling Tower Co., Inc., 114 Liberty St., New York City.
Phillips Drill Co., 4700 Fifth Ave., Chicago.
Phoenix Ice Machine Co., 2711 Church St., Cleveland.
Phoenix Ventilator Co., Inc., 1665 63rd St., Brooklyn.
Piatt Products Corporation, 1149 S. Pennsylvania Ave., Lansing, Mich.
Pier Equipment Mfg. Co., 1440 Milton St., Benton Harbor, Mich.
Pilley Brush Co., Fort Madison, Ia.
Pioneer Heat Regulator Division, Master Electric Co., 100 Davis Ave., Dayton, Ohio.
Pioneer Roofing & Sheet Metal Co., 226 N. Main St., Muskogee, Okla.
Pioneer Water Heater Co., 3005 Andriba St., Los Angeles.
Pittsburgh Furnace Parts Co., 109 Federal St., Pittsburgh.
Pittsburgh Plate Glass Co., 2000 Grant Bldg., Pittsburgh.
Pittston Stove Co., P. O. Box 279, Pittston, Pa.
Plant Rubber & Asbestos Works, 537 Brannan St., San Francisco.
Plastergon Wall Board Co. Philadelphia Ave., Buffalo, N. Y.
Plastic Products Co., 6475 Georgia Ave., Detroit, Mich.
Pleasantaire Corp., 329 Tower Bldg., Washington, D. C.
Plibrico Jointless Firebrick Co., 1800 Kingsbury St., Chicago, Ill.
Plymouth Cordage Co., Court St., North Plymouth, Mass. (Anderson Products, Inc., Cambridge, Mass., National Sales Agents.)
Plymouth Industries Inc., 1932 Harrison Ave., Plymouth, Ind.
Pocahontas Fuel Company Incorporated, Stoker Div., 1190 E. 152nd St., Cleveland.
Poe Co., C. W., 2795 E. 83rd St., Cleveland.
Poe, Ralph W., 44 White Ct., Canton, Ill.
Polk Mfg. Co., 2021-23 Winnebago St., Madison Wis.
Pomona Pump Co., 206 E. Commercial St., Pomona, Cal.
Poole Foundry & Machine Co., 1700 Union Ave., Woodberry, Baltimore.
Portland Stove Fdry. Co., 57 Kennebec St., Portland, Me.
Potomac Mfg. Co., 316 S. 10th St., Philadelphia, Pa.
Power King Tool Corporation, P. O. Box 150, Warsaw, Ind.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Practical Instrument Co., 2717 N. Ashland Ave., Chicago, Ill.
Prat-Daniel Corporation, Port Chester, N. Y.
Precision Control Co., 899 Bryant St., San Francisco.
Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia, Pa.
Preferred Utilities Manufacturing Corp., 33 W. 60th St., New York City.
●Premier Furnace Co., Lock Box 150, Dowagiac, Mich.
Premier Metal Etching Co., 21-03 44th Ave., Long Island City.
Presstite Engineering Co., 3900 Chouteau St., St. Louis, Mo.
Pressure Oil Burners, Inc., 55 N. Broad St., York Pa.
Primold Products Corp., 103 Park Ave., New York City.
Propellair, Inc., 1345 Lagonda Ave., Springfield, O.
Protective Coatings, Incorporated, P. O. Box 56, Strathmoor Station, Detroit.
Puhl & Hepper Mfg. Co., Inc., 6400 W. Florissant Ave., St. Louis, Mo.
Pyott Foundry & Machine Co., 328 N. Sangamon St., Chicago, Ill.
Pyramid Metals Co., 1334 N. Wells St., Chicago.
Pyrolite Products Co., 1221-31 W. 74th St., Cleveland, O.

Q

Quaker Mfg. Co., 228 W. Erie St., Chicago, Ill.
Quick Furnace & Supply Co., 210 Court St., Des Moines, Ia.
Quickwork-Whiting Div., Whiting Corporation, 157th & Halsted Sts., Harvey, Ill.
Quiet-Heet Mfg. Corp., 135 N. J. Railroad Ave., Newark, N. J.
Quigley Company, Inc., 56 W. 45th St., New York City.
Quimby Pump Co., Inc., 340 Thomas St., Newark, N. J.
●Quincy Stove Manufacturing Co., 807 S. Front St., Quincy, Ill.

R

R-S Products Corp., 4530 Germantown Ave., Philadelphia, Pa.
Racine Stoker Mfg. Co., 1014 Eighth St., Racine, Wis.
Racine Tool & Machine Co., Erskine & Cook Sts., Racine, Wis.
Radiation Furnace Corp., 230 Bond St., Benton Harbor, Mich.
Radiator Specialty Co., 1723 Dowd Rd., Charlotte, N. C.
Rafter Machine Co., 259 Stephen St., Belleville, N. J.
Ramey Mfg. Co., 243 N. 5th St., Columbus, O.
Ramtite Co., Div. S. Obermayer Co., 2563 W. 18th St., Chicago.
Ranco Inc., 601 W. Fifth Ave., Columbus, O.
●Randall Graphite Products Corp., 609 W. Lake St., Chicago.
Ransome Machinery Co., Industrial Div., Dunellen, N. J.
Ravenna Furnace & Heating Co., Ravenna, O.
Rawlplug Co., Inc., The, 91 Lafayette St., New York City.
Ray Oil Burner Co., 401-499 Bernal Ave., San Francisco, Cal.
Reed Unit-Fans, Inc., 501 N. St. Patrick St., New Orleans, La.
Reeves Pulley Co., 1000 N. Wilson St., Columbus, Ind.
Reeves Steel & Mfg. Co., Lock Box 107, Dover, O.
Refractory & Insulation Corp., 120 Wall St., New York City.
Refrigeration Appliances, Inc., 923 W. Lake St., Chicago, Ill.
Refrigeration Economics Co., Inc., 1232 Second St. N. E., Canton, Ohio.
Rega Mfg. Co., 79 Mt. Hope Ave., Rochester, N. Y.
●Register & Grille Mfg. Co., Inc., 70 Berry St., Brooklyn, N. Y.
Reichert Float & Mfg. Co., 2238 Smead Ave., Toledo, O.
Reif-Rexoil, Inc., 37 Carroll St., Buffalo N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., Indianapolis, Ind.
Reiner & Campbell Co.,. Inc., 667 Norwood Terrace, Elizabeth, N. J.
Reliable Gas Products Co., 1024 Second Ave., W. S., Cedar Rapids, Ia.
Reliable Perforating Co., 2047 N. Wood St., Chicago, Ill.
Reliable Sheet Metal Engineering Co., 4334-50 S. Knox Ave., Chicago.

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Reliance Automatic Lighting Co., 1929 Mead St., Racine, Wis.
Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., N. E., Cleveland, O.
Reliance Refrigerating Machine Co., 3401 N. Kedzie Ave., Chicago, Ill.
Rempe Co., 340 N. Sacramento Ave., Chicago, Ill.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Republic Steel Corp., Republic Bldg., Cleveland, O.
Research Corp., 405 Lexington Ave., New York City.
●Research Products Corporation, 1015 E. Washington Ave., Madison, Wis.
Retinning Manufacturing Co., 3021 Greenview Ave., Chicago.
Revere Copper and Brass Incorporated, 230 Park Ave., New York City.
Rex Clay Products Company, 14414 Dexter Blvd., Detroit.
Reynolds Electric Company, 2685 W. Congress St., Chicago.
Reynolds Manufacturing Co., 412 Prospect N. E., Grand Rapids, Mich.
Reynolds Manufacturing Co., Springfield, Mo.
Reynolds Metals Co., Inc., Federal Reserve Bank Bldg., Richmond, Va.
Reznor Mfg. Co., Lock Box 231, Mercer, Pa.
Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.
Ribside Furnace Co., 119½ Clinton St. Wausau, Wis.
Richards-Wilcox Mfg. Co., Third St., Aurora, Ill.
Richmond Fireproof Door Co., Northwest F St., Richmond, Ind.
Richmond Radiator Co.., Inc., P. O. Box 951, Uniontown, Pa.
Riester & Thesmacher Co., 1526 W. 25th St., Cleveland.
Riggin Metal Products, Inc., Box 267, Kankakee, Ill.
Riley Stoker Corp., 9 Neponset St., Worcester, Mass.
Rising & Nelson Slate Co., West Pawlet, Vt.
Rival Strap Corporation, 308 W. 20th St., New York City.
Riverton Lime & Stone Co., Inc., Riverton, Va.
Roan Mfg. Co., 1220 Washington Ave., Racine, Wis.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, O.
Roberts-Gordon Appliance Corp., 137 Arthur St., Buffalo.
Roberts-Hamilton Co., 707-715 S. Third St., Minneapolis.
Roberts Tube Works, 2500 Military Ave., Detroit.
Robertson, F. L., 56 Rano St., Buffalo, N. Y.
Robertson Co., H. H., 2400 Farmers Bank Bldg. Pittsburgh.
Robinson Furnace Co., 213 W. Hubbard St., Chicago.
Robinson Insulation Co., P. O. Box 1419, Great Falls, Mont.
Rochester Lead Works, Inc., 380 Exchange St., Rochester, N. Y.
Rochester Mfg. Co., Brighton Station, Rochester, N. Y.
Rock Fleece Company, 115 Durango St., El Paso, Texas.
●Rock Island Register Co., 2425 Fifth Ave., Rock Island, Ill.
Rock Island Stove Co., 200 Fourth St., Rock Island, Ill.
Rockford Brass Works, Rockford, Ill.
Rock River Machine Div., Hannifin Mfg. Co.,. 621 S. Kolmar Ave., Chicago.
Rockwood Mfg. Co., 1801 English Ave., Indianapolis, Ind.
Roebling's Sons Co., John A., 640 S. Broad St., Trenton, N. J.
Roesch & Associates, Inc., 120 E. Washington St., Syracuse, N. Y.
Roessing Mfg. Co., 1616 Noble St., Sharpsburg Sta., Pittsburgh.
Roller Bearing Co. of America, Whitehead Rd., Trenton, N. J.
Rolyan Corp., 2241 Indiana Ave., Chicago.
Rome-Turney Radiator Co., Canal St., Rome, N. Y.
Roof Specialties Co.,. Inc., 1132 Stedman, N. S., Pittsburgh.
Roper Corp., Geo. D., Blackhawk Park Ave., Rockford, Ill.
Rosebraugh Co., W. W., 680 S. 17th St., Salem, Ore.
Rosedale Foundry & Machine Co., Columbus Ave., N. S., Pittsburgh, Pa.
Ross Sprinkler Co., 34 Roberts St., Pasadena, Cal.
Rotary Mfg. Co., 5718 Long Beach Ave., Los Angeles, Cal.
Roto-Beam Division, Peerless of America, Inc., 3300 S. Indiana Ave., Chicago.
Round Oak Co.., Dowagiac, Mich.
Roxalin Flexible Finishes, Inc., 800 Magnolia Ave., Elizabeth, N. J.
Royal Air Conditioning Equipment Co., 1024 Westminster Ave., Alhambra, Cal.
Royal-Apex Mfg. Corp., 62 Schenectady Ave., Brooklyn, N. Y.
Royal Ventilator Co., 415 Locust St., Philadelphia, Pa.
Royersford Foundry & Machine Co., 55 Main St., Royersford, Pa.
Ruberoid Co., The, 500 Fifth Ave., New York City.
●Ruby Chemical Co., 74 McDowell St., Columbus, O.
Rudy Furnace Co., Dowagiac, Mich.
Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee, Wis.
Ruggles-Klingemann Mfg. Co., 4 Foster Ct, Salem, Mass.
Russell & Company, W. A., Bridgeport, Conn.
Russell Electric Co., 342 W. Huron St., Chicago, Ill.
Russell Co,. F. C., 1836 Euclid Ave., Cleveland.
Russell Mfg. Co., John M., Box 246, Naugatuck, Conn.
Rust Products Co. of America, 618 W. Adams St., Chicago.
Rusticide Products Co., 3125 Perkins Ave., Cleveland.
Rutland Fire Clay Co., 91 Curtis Ave., Rutland, Vt.
●Rybolt Heater Co., Miller St., Ashland, O.
●Ryerson & Son, Inc., Joseph T., 2558 W. 16th St., Chicago.
Ryniker Sheet Metal Works, Inc., 122-124 N. 25th St., Billings, Mont.

S

S K F Industries, Inc., Front St. & Erie Ave., Philadelphia.
Saftee Glass Co., Stenton Ave. & Louden St., Philadelphia.
Saino Mfg. Co., Inc., F. L., 70 W. Colorado Ave., Memphis, Tenn.
St. Charles Mfg. Co., St. Charles, Ill.
St. Clair Foundry Corp., Beech & Wilson Sts., Centralia, Ill.
St. Louis Furnace Mfg. Co., 2901 Elliot Ave., St. Louis, Mo.
St. Louis Tool Co., 1521 N. Grand Ave., St. Louis.
St. Paul Corrugating Co., Wabasha & Water Sts., St. Paul, Minn.
●Sall Mountain Co., 176 W. Adams St., Chicago, Ill.
Sampsel Time Control, Inc., Spring Valley, Ill.
Samson Plaster Board Co., Crosby Bldg., Buffalo, N. Y.
Sandberg Co., H. J., 500 N. E. Union Ave., Portland, Ore.
Sangamo Electric Co., 1301 N. 11th St., Springfield, Ill.
Sanmyer Corporation, 1265 W. North Ave., Chicago.
Sanvin Chemical Products Co.,. 1617 21st Ave., Moline, Ill.
Sarco Co., Inc., 475 Fifth Ave., New York City.
Sauereisen Cements Co., 2341 Main St., Sharpsburg Station, Pittsburgh, Pa.
Savage Co., W. J., 912 W. Clinch Ave., Knoxville, Tenn.
Sawyer Electrical Mfg. Co.,. 5701 Smithway, Los Angeles, Cal.
●Schaefer Brush Mfg. Co., 117 W. Walker St., Milwaukee.
Schatz Mfg. Co., Fairview, Poughkeepsie, N. Y.
Schecter Brothers Co., Hancock & Huntington Sts., Philadelphia.
Scherr Co.,. Inc., George, New York City.
Schieren Co., Chas. A., 30-38 Ferry St., New York City.
Schill Mfg. Co., 302 Mansfield St., Crestline, O.
Schmieg Sheet Metal Works, 312-320 Piquette Ave., Detroit.
Schoedinger, F. O., 322-358 Mt. Vernon Ave., Columbus, O.
Schundler & Co., Inc., F. E., Insulation Div., 504 Railroad St., Joliet, Ill.
●Schwab Furnace Company, 193 S. Second St., Milwaukee.
Schwab Safe Co., East Main & Blvd., Lafayette, Ind.
●Schwitzer-Cummins Co., 1125 Massachusetts Ave., Indianapolis, Ind.
Scientific Instrument Co., 531-35 W. Larned St., Detroit.
Scott Engineering Co., 23 N. Sixth St., Noblesville, Ind.
Scott-Newcomb, Inc., 1922 Pine St., St. Louis, Mo.
Scovill Mfg. Co., Morency-Van Buren Div., Prairie Ave., Sturgis, Mich.
Sealkote Corp., 40 S. Clinton St., Chicago, Ill.
Seamlex Co., 27-27 Jackson Ave., Long Island City, N. Y.
Season-Aire Corporation of America, 20 Bartlett St., Detroit.
Security Manufacturing Co., 1630 Oakland Ave., Kansas City, Mo.
Self-Vulcanizing Rubber Co., Inc., 605 W. Washington Blvd., Chicago, Ill.
Semco Mfg. Co., 118-122 Third Ave., N.,. Nashville, Tenn.
Seneca Wire & Mfg. Co., Fostoria, Ohio.
Sentry Mfg. Co., N. E. Cor. 13th & Grace Sts., Omaha, Nebr.
Servel, Inc., Electric Ref. & Air Cond. Div., 119 Morton Ave., Evansville, Ind.
Service Machine Co., 158 Miller St., Elizabeth, N. J.
Service to Industry, Box 133, West Hartford, Conn.
Shafer Bearing Corp., 35 E. Wacker Dr., Chicago.
Shakeproof, Inc, 2501 N. Keeler Ave., Chicago.
Shallcross Co., 48th & Grays Ferry Rd., Philadelphia.
Shamblen Furnace Parts Co., 231-39 First Ave., Pittsburgh.
Sharon Steel Corp., Drawer 537, Sharon, Pa.
Shedlov Oil Burners, Inc., 717 Third Ave., S. Minneapolis.
●Sheet Lock Co., 7 So. Dearborn St., Chicago.
Sheet Metal Mfg. Co., Inc., 953 Myrtle Ave., Brooklyn.
Sheet Metal Products Co., 320 S. Commercial St., Peoria, Ill.
Sheet Metal Specialty Company, 3rd & Liberty Ave., Pittsburgh.
Sheldon State Products Co., Inc., 4 Main St., Granville, N. Y.
Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland.
Shreveport Engineering Co.,. Inc., 1553-55 Texas Ave., Shreveport, La.
Sight Feed Generator Co., 14 N. Tenth St., Richmond, Ind.
Signal Electric Mfg. Co., P. O. Box 75, Menominee, Mich.
Silent Glow Oil Burner Corp., 1477 Park St., Hartford, Conn.
Silent Sioux Oil Burner Corp., Orange City, Ia.
Silvercote Products, Inc., 161 E. Erie St., Chicago.
Simplex Ceiling Co., 607 W. 48th St., New York City.
Simplex Manufacturing Co., 200 North Main St., Fond du Lac, Wis.
Simplex Oil Heating Corp., 101 Central Ave., Newark, N. J.
Sinker-Davis Co., 230 S. Missouri St., Indianapolis, Ind.
Sioux City Foundry and Boiler Co., East 8th & Division Sts., Sioux City, Iowa.
Sipe & Company, James B., Box 8010 S. Hills Branch, Pittsburgh.
Sisalkraft Co., The, 205 W. Wacker Dr., Chicago.
Skilbeck Mfg. Co., 7432 27th Ave., Kenosha, Wis.
●Skilsaw, Inc., 5033 Elston Ave., Chicago, Ill.
Skinner Heating & Ventilating Co., Heater Div. of St. Louis Blow Pipe & Heater Co., Inc., 1954 N. 9th St., St. Louis.
Skuttle Manufacturing Company, 10289 Greeley Ave., Detroit.
Sly Mfg. Co., W. W., 4736 Train Ave., Cleveland, O.

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Small Motors, Inc., 1322 Elston Ave., Chicago.
Smidth & Co., F. L., 60 E. 42nd St., New York City.
Smith Heater Co., Peter, 6209 Hamilton Ave., Detroit, Mich.
Smith & Kanzler Corp., 516 Lidgerwood Ave., Elizabeth, N. J.
Smith Manufacturing Co., Inc., F. A., P. O. Box 509, Rochester, N. Y.
Smith-Raymond Co., 1231-33 Tenth Ave., Columbus, Ga.
•Smith, R. E., 1513 Monroe St., Waukegan, Ill.
Smith Welding Equipment Corp., 2619-33 Fourth St., S. E., Minneapolis, Minn.
Smith, Inc., Winfield H., 114 Eaton St., Springfield, Erie Co., N. Y.
Smooth-on Mfg. Co., 568-574 Communipaw Ave., Jersey City, N. J.
Snap-On Mfg. Co., 1028 Blue Island Ave., Chicago, Ill.
Snap-On Tools Corp., Kenosha, Wis.
Snead, Herbert S., 205 E. 42nd St., New York City.
Socony Paint Products Company, 26 Broadway, New York, N. Y.
Somers, Inc., H. J., 6063 Wabash Ave., Detroit, Mich.
Sonneborn Sons, Inc., L., 88 Lexington Ave., New York City.
Sonner Burner Co., 6th & Andrews, Winfield, Kan.
Soss Manufacturing Co., 21777 Hoover Rd., Detroit.
South Bend Air Products, Inc., 322 E. Colfax, South Bend, Ind.
Southbridge Roofing Co., Inc., Hartwell & Chapin Sts., Southbridge, Mass.
Souther Iron Co., E. E., 1952 Kienlen Ave., St. Louis.
Southern Fan & Blower Co., 1305 S. Lamar St., Dallas, Tex.
Southern States Iron Roofing Co., Stiles Ave. & Louisville Rd., Savannah, Ga.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Spartan Electric Company, P. O. Box 509, Rochester, N. Y.
Spear Stove & Heater Co., James, 3430 Chestnut St., Philadelphia.
Specialty Converters, Inc., East Braintree, Mass.
Speedmaster Company, 1201 Thacker St., Des Plaines, Ill.
Speedway Mfg. Co., 1854 S. 52nd Ave., Cicero, Ill.
Spencer Heater Division Aviation Corp., 164 Park St., Williamsport, Pa.
Spencer Thermostat Co., Unit of Metals & Controls Corp., 34 Forest St., Attleboro, Mass.
Spencer Turbine Co., 484 New Park Ave., Hartford, Conn.
Spiegel Corporation, G. B., 3958 Calumet Ave., Chicago.
Spoehrer-Lange Co., 3723 Commonwealth St., St. Louis.
Spray Engineering Co., 103 Central St., Somerville, Mass.
Spray Wheel Air Conditioners, Inc., 1320 19th St., Denver, Colo.
Spraying Systems Co., 4021F W. Lake St., Chicago, Ill.
Sprayo-Flake Co., 2715 Irving Park Blvd., Chicago, Ill.
Sprout-Waldron & Co., Muncy, Pa.
Spun Steel Corp., 2037 Dueber Ave., S. W., Canton, O.
Square D Co., 6060 Rivard St., Detroit, Mich.
Stafford Co., N., 1st Ave. & 53rd St., Brooklyn, N. Y.
Stainless & Steel Products Co., 1000 Berry Ave., St. Paul, Minn.
Standard Asbestos Mfg. Co., 820-22 W. Lake St., Chicago, Ill.
Standard Computing Scale Co., Air Conditioning and Refrigeration Div., 2461 E. Grand Blvd., Detroit.
Standard Engineering Works, 289 Roosevelt Ave., Pawtucket, R. I.
Standard Fuel Engineering Co., 667 Post Ave., South, Detroit, Mich.
Standard Furnace & Supply Co., 413-17 S. Tenth St., Omaha, Nebr.
Standard Galvanizing Co., 2619 W. Van Buren St., Chicago.
Standard Heater & Oil Equipment Co., 245 Cornelison Ave., Jersey City, N. J.
Standard Heating & Radiator Co., 704 Second Ave., Pittsburgh, Pa.
Standard Lime & Stone Co., 2004 First National Bank Bldg., Baltimore, Md.
Standard Pressed Steel Co., Jenkintown, Pa.
Standard Products Co., Fisher Building, Detroit.
Standard Rolling Mills, Inc., 143 Jewel St., Brooklyn, N. Y.
•Standard Stamping & Perforating Co., 3137 W. 49th Pl., Chicago, Ill.
Standard Steel Spring Co., 2640 E. Fifth Ave., Gary, Ind.
Standard Thermometer, Inc., 65 Shirley St., Boston.
Standard Ventilator Co., Lewisburg, Pa.
•Stanley Electric Tool Div., The Stanley Works, 131 Elm St., New Britain, Conn.
Stanley Mfg. Co., East Monument Ave., Dayton, O.
Stanley Tools, New Britain, Conn.
Stanton Heater Co., Martins Ferry, O.
Star Electric Motor Co., 197 Grove St., Bloomfield, N. J.
Star Expansion Bolt Co., 147 Cedar St., New York City.
Starr Piano Co., Richmond, Ind.
Staynew Filter Corp., 11 Centre Park, Rochester, N. Y.
Sta-Warm Electric Co., Ravenna, Ohio.
Steamaire Co., Dana Ave. & Newton St., Cincinnati, Ohio.
Steel Products Engineering Co., 1205 W. Columbia St., Springfield, Ohio.
Steinhorst & Sons, Inc., Emil, 612 South St., Utica, N. Y.
Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.
Stephens Mfg. Co., 2507 E. 15th St., Tulsa, Okla.
Sterling Electric Motors, Inc., 5401 Telegraph Rd., Los Angeles.
Sterling Foundry Co., Sterling, Ill.
Ster-Na-Man Fdry. Co., 441 Williams St., Springfield, Ill.
Stewart Foundry, O. S., 887 E. 67th St., Cleveland, O.
Stewart Ice Machine Co., 1046 East 22nd St., Los Angeles.
Stewart Manufacturing Co., 309 Washington St., Orange, N. J.
Stiglitz Furnace & Foundry Co., 2007-23 Portland Ave., Louisville, Ky.
Stok-A-Fire Co., Inc., 6504 Olive Street Road, University City, Mo.
Stokerette Mfg. Co., 4540 Ravenswood Ave., Chicago, Ill.
Stoker-Lad, Inc., 1111 A St., Tacoma, Wash.
Stokermatic Co., 1415 S. State St., Salt Lake City, Utah.
Stoker Products, Inc., 221 W. Prairie Ave., Decatur, Ill.
Stokerunit Corp., 4548 W. Mitchell St., Milwaukee.
Stokes, Jr., J. W., successor to American Coppercote, Inc., 189 Montague St., Brooklyn, N. Y.
Stoket Manufacturing Co.,. 964 Berry Ave., St. Paul, Minn.
Stossel & Sons, Carl, Front Royal, Va.
Stove Manufacturers Corporation, 182 Mulberry St., Newark, N. J.
Stover Mfg. & Engine Co., N. Henderson Ave., Freeport, Ill.
Stow Mfg. Co., 400 State St., Binghamton, N. Y.
Strandwitz & Co., Inc., W. J., Jefferson and Master St., Camden, N. J.
Stratton & Terstegge Co., 15th & Main St., Louisville, Ky.
Streamline Pipe & Fittings Div., Mueller Brass Co., Port Huron, Mich.
Streine Tool & Mfg. Co., New Bremen, Ohio.
Structural Slate Co., Robinson Ave., Pen Argyl, Pa.
Struthers Dunn, Inc., 1315 Cherry St., Philadelphia.
•Sturtevant Co., B. F., Damon St., Hyde Park, Boston, Mass.
Sundstrand Engineering Co., 1327 Seventh St., Rockford, Ill.
Sun-Fire Stoker Corporation, New Albany, Ind.
Sundstrand Pump Division, 2530 Eleventh St., Rockford, Ill.
Super Radiator Corp., 652 Stinson Blvd., Minneapolis.
•Superior Sheet Steel Co., The, Division of Continental Steel Corp., Canton & Louisville Rd., Canton, O.
Superior Steel Corp., Grant Bldg., Pittsburgh, Pa.
Supreme Air Filter Co., 126 W. 21st St., New York City.
Supreme Electric Products Corp., 194 Vassar St., Rochester, N. Y.
Supreme Heater & Ventilating Corp., 1911 N. Market St., St. Louis, Mo.
Sure Comfort Furnace Co., 1212 S. Elmwood Ave., Berwyn, Ill.
Surface Combustion, 2375 Dorr St., Toledo, O.
Susquehanna Engineering Co., Ninth & Iron Sts., Bloomsburg, Pa.
Sutphen & Co., J. W., 150 S. LaBrea Ave., Los Angeles, Cal.
Swaby Mfg. Co., 2330 W. Cermak Rd., Chicago, Ill.
Swaine Mfg. Co., Fred J., 1300 N. Seventh St., St. Louis, Mo.
•Swartwout Co., 18615 Euclid Ave., Cleveland, O.
Swift Mfg. Company, 247 McDougall Ave., Detroit, Mich.
Swing-A-Way Steel Products, Inc., 1439 Merchandise Mart, Chicago.
Syncro-Flame Burner Corp., 57 North St., Willimantic, Conn.
•Syncromatic Air Conditioning Corporation, 3373 North Holton St., Milwaukee.
Syntron Co., Homer City, Pa.
Syracuse Fire Door Corp., 900 Canal St., Syracuse, N. Y.

T

Taco Heaters, Inc., 342 Madison Ave., New York City.
Tagliabue Mfg. Co., C. J., Park & Nostrand Aves., Brooklyn.
Tamms Silica Co., 228 N. La Salle St., Chicago, Ill.
Tannewitz Works, 315 Front Ave., N. W., Grand Rapids, Mich.
Taylor Engineering Co., Metropole Hotel, Cincinnati.
Taylor-Hall Welding Corp., 99 Hope Ave., Worcester, Mass.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Taylor-Winfield Corp., 1052 Mahoning Ave., N. W., Warren, O.
Technical Coatings, Inc., 50 Broad St., New York City.
Tecumseh Products Co., Tecumseh, Mich.
Telsit Insulation Co., 1933 West Farms Road, Bronx, N. Y.
Tem Products Co., Midland, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Tennessee Enamel Mfg. Co., 4104 Park Ave., Nashville, Tenn.
Tennessee Products Corp., American Natl. Bk. Bldg., Nashville, Tenn.
Thatcher Furnace Company, Centre St., Garwood, N. J.
Therminsul Corp., 1603 Fulford St., Kalamazoo, Mich.
Thermoid Rubber Div. of Thermoid Co., Whitehead Rd., Trenton, N. J.
Thompson & Company, 1085 Allegheny Ave., Oakmont (Pittsburgh Dist.) Pa.
Thomson-Gibb Electric Welding Co., 161 Pleasant St., Lynn, Mass.
ThruBond Flashing Corp., 1204 Washington Ave., New York City.
Tierney Rotor Ventilator Co., 239 4th Ave., S., Minneapolis.
Tiffin Eaves Trough Clamp Co., 25 Miami St., Tiffin, Ohio.
Tilco-Fin, Inc., 58 Second Ave., Brooklyn, N. Y.

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Timken Roller Bearing Co., Canton, O.
Timken Silent Automatic Div., Timken-Detroit Axle Co., 100 Clark Ave., Detroit, Mich.
Timm & Son, P. C., 2626 C St., Lincoln, Nebr.
Tinnerman Products, Inc., 2038-46 Fulton Road, Cleveland.
TiteFlex Metal Hose Co., 500 Frelinghuysen Ave., Newark, N. J.
Toch Brothers, Inc., 2600 Richmond Ter., Elm Park, S. I., N. Y.
Todd Combustion Equipment, Inc., 601 W. 26th St., New York, N. Y.
Toledo Stoker Co., 48 Blucher St., Toledo, O.
Torchweld Equipment Div. National Cylinder Gas Co., 1035 W. Lake St., Chicago, Ill.
Torit Manufacturing Co., 292 Walnut St., St. Paul, Minn.
Tork Clock Co., Inc., 1 Grove St., Mt. Vernon, N. Y.
Torrington Co., P. O. Box 118, Torrington, Conn.
Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
Townsend Co., New Brighton, Pa.
Trade-Wind Motor Fans, Inc., 5725 S. Main St., Los Angeles.
Trane Co., The, La Crosse, Wis.
Tremont Nail Company, Wareham, Mass.
Trerice Co., H. O., 1420 W. Lafayette Blvd., Detroit, Mich.
●Triangle Manufacturing Co., 388 Division St., Oshkosh, Wis.
Trimount Rotary Power Co., 296 Whiting Ave., East Dedham, Mass.
Trindl Products, Ltd., 2227 BD-Calumet Ave., Chicago.
Triplex Mfg. Co., Peru, Ind.
Tri-State Heating Supply Co., 234-236 Murray St., Fort Wayne, Ind.
Tropic-Air Stoker Co., 2017 Indiana Way, N. E., Canton, Ohio.
Tropical Paint & Oil Co., 1244-86 W. 70th St., Cleveland, O.
Trumbull Electric Mfg. Co., Woodford Ave., Plainville, Conn.
Trufio Fan Co., 523 Main St., Harmony, Pa.
Truscon Laboratories, Caniff & Grand Trunk R. R., Detroit.
Truscon Steel Co., Albert St., Youngstown, O.
Tubular Rivet & Stud Co., Wollaston, Mass.
Turner & Seymour Mfg. Co., Lawton St., Torrington, Conn.
Turner Brass Works, 823 Park Ave., Sycamore, Ill.,
Tuthill Pump Company, 939 E. 95th St., Chicago.
Tuttle Air Filter Co., Inc., 1014 W. Main St., Louisville, Ky.
●Tuttle & Bailey, Inc., Corbin Ave., New Britain, Conn.
Twentieth Century Heating & Ventilating Co., 71 Ira Ave., Akron, Ohio.

U

Uehling Instrument Co., 478 Getty Ave., Paterson, N. J.
Una Welding, Inc., 1615 Collamer Ave., Cleveland, O.
Unified Air Conditioner Co., 323 W. Michigan St., Duluth, Minn.
Uniflow Mfg. Co., East Lake Road, Erie, Pa.
U-Ni-Matic Heating Systems, Inc., 1303 W. Slauson Ave., Los Angeles, Cal.
Union Manufacturing Co., Inc., 6th & Washington Sts., Boyertown, Pa.
Union Rock Wool Corp, Chestnut St., Wabash, Ind.
Union Steam Pump Co., S. W. Capital Avenue, Battle Creek, Mich.
●Unique Manufacturing Co., Inc., 218 W. Walton St., Chicago.
United American Bosch Corp., 3664 Main St., Springfield, Mass.
United Cork Companies, Central Ave. & N. J. Central R. R., Kearny, N. J.
United Electric Controls Co., 69 "A" St., South Boston.
United Metal Hose Co., Inc., 36-01 43rd Ave., Long Island City, N. Y.
United Metal Prod. Div., Canton, Ohio.
U. S. Air Conditioning Corp., 2101 Kennedy St., N. E., Minneapolis, Minn.
United States Brass & Copper Co., Hyde Park Ave., Hyde Park, Mass.
United States Burner Corp., River Road, Wethersfield, Conn.
U. S. Cistern Filter Mfg. Co., The, 509 S. McClun St., Bloomington, Ill.
U. S. Electrical Motors, Inc., 200 E. Slausson Ave., Los Angeles.
U. S. Expansion Bolt Co., Inc., P. O. Box 827, York, Pa.
United States Electrical Tool Co., 1050 Findlay St., Cincinnati, Ohio.
U. S. Gutta Percha Paint Company, 14 Dudley St., Providence, R. I.
United States Gypsum Co., 300 W. Adams St., Chicago, Ill.
U. S. Machine Corporation, Lebanon, Ind.
United States Mineral Wool Co., 9 S. Clinton St., Chicago.
United States Ozone Co. of America, Crescent St., Scottdale, Pa.
United States Radiator Corp., 1500 United Artists Bldg., Detroit.
●United States Register Co., Burnham St., Battle Creek, Mich.
U. S Rock Wool Co., 40 S. Main, Salt Lake City.
United States Rubber Co., 1230 Sixth Ave., New York City.
United States Steel Corp., 436 Seventh Ave., Pittsburgh, Pa.
●United States Steel Supply Co., 1319 W. Wabansia, Chicago.
U. S. Stoneware Company, Akron, Ohio and 60 E. 42nd St., New York City.
Uni-Therm Products Co., P. O. Box 83, Elyria, O.
Universal Air Filter Corp., 332 W. Michigan St., Duluth, Minn.
Universal Blower Co., 1090 S. Adams Ave., Birmingham, Mich.
Universal Cooler Corp., 299 Joseph St., Marion, Ohio.
Universal-Cyclops Steel Corp., Bridgeville, Pa.
Universal Gypsum & Lime Co., 111 W. Washington St., Chicago.
Universal Manufacturers, Inc., Midland Park, N. J.
●Universal Power Corporation, 4300 Euclid, Cleveland.
Universal Zonolite Insulation Co., 135 S. LaSalle St., Chicago.
Uno Ventilator Co., 565 Lincoln Ave., Cliftondale Station, Saugus, Mass.
Upson Co., The, Upson Point, Lockport, N. Y.
Utility Fan Corporation, 4851 S. Alameda St., Los Angeles.

V

Vacuum Gas Appliance Div., Union Fork & Hoe Co., Rome, N. Y.
Vail Mfg. Co., 1017 Columbia Ave., Fort Wayne, Ind.
Valley Mfg. Co., Fryeville, Athol, Mass.
Van Dorn Electric Tool Co., Towson, Md.
Van Noorden Co., E., 100 Magazine St., Boston, 19, Mass.
Van Praag Sales, 22 East 17th St., New York City.
Vendor Slate Co., Inc., P. O. Box 204, Nazareth, Pa.
Ventilating Products Co., 2800 Cottage Grove Ave., Chicago.
Vent-O-Lite Co., 4230 W. Taylor St., Chicago, Ill.
Vermont Structural Slate Co., Inc., P. O. Box 98, Fair Haven, Vt.
●Verson Allsteel Press Co., 1351 E. 93rd St., Chicago.
Vibration Eliminator Co., 8-22 Astoria Blvd., Astoria, N. Y.
Victor Electric Products, Inc., 2950 Robertson Road, Cincinnati, Ohio.
Victor Equipment Co., 844 Folsom St., San Francisco.
Victor Oil Burner Mfg. Co., 250 Pleasant St., Hartford, Conn.
Viking Air Conditioning Corp., 5600 Walworth Ave., Cleveland, O.
Viking Mfg. Corp., 1234 Ray St., Dayton, Ohio.
Viking Pump Co., 404 State St., Cedar Falls, Ia.
Viking Shear Co., 1063 19th St., Erie, Pa.
Vilter Mfg. Co., 2217 S. First St., Milwaukee, Wis.
Vita-Screen Ventilator Co., 103 Park Ave., New York City.
Volcano Burner Corp., 3612 E. Tremont Ave., New York City.
Vortex Mfg. Co., 687 N. Tillamook St., Portland, Ore.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Vulcan Metal Products Company, 1st Ave. at 39th St., N., Birmingham, Ala.

W

Wagner, C. DeWitt, 1000 S. 2nd St., Cedar Rapids, Ia.
●Wagner Electric Corp., 6440 Plymouth Ave., St. Louis, Mo.
Wailes Dove-Hermiston Corp., Westfield, N. J.
Waldron Corp., P. O. Box 110, John, New Brunswick, N. J.
●Walker Mfg. & Sales Corp., 1711-1717 Penn St., St. Joseph, Mo.
Wall Chemicals Div., Liquid Carbonic Corp., 625 W. Jackson Blvd., Chicago.
Wall Mfg. Supply Company, P., 3126 Preble Ave., N. S. Pittsburgh.
Walsh Refractories Corp., 4070 N. First St., St. Louis.
Ward Co., Edgar T., Inc., 7777 W. Lake St., River Forest, Ill.
Ward Co., H. H., Chester, Pa.
Ward Heater Co., 1800 W. Washington Blvd., Los Angeles, Cal.
Ward Leonard Electric Co., 37 South St., Mt. Vernon, N. Y.
Ward Machinery Co., 564 W. Washington Blvd., Chicago.
Ward Mfg. Co., Plymouth, Mich.
Warren Handle Works Co., 1100 Pearl St., Cortland, Ohio.
Warren Shade Co., Inc., 2905 E. Hennepin Ave., Minneapolis.
Washburne & Co., E. G., 207 Fulton St., New York City.
Waterloo Register Co., 2520 E. Fourth St., Waterloo, Ia.
Water Cooling Corporation, 71 Nassau St., New York City.
Waterman-Waterbury Co., 1122 Jackson St., N. E., Minneapolis, Minn.
Wattenamel Co., 7400 Archer Ave., Summit, Ill.
Waukesha Lime & Stone Co., P. O. Box 27, Waukesha, Wis.
Waverly Heating Supply Co., 31 Union St., Boston, Mass.
Wayne Automatic Relay Co., 622 Wagner St., Fort Wayne, Ind.

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Wayne Oil Burner Company, 800 Glasgow Ave., Fort Wayne, Ind.
Weatherall Engineers, Inc., 3 Friendship St., Providence, R. I.
Weatherhead Co., 300 E. 131st St., Cleveland, O.
Weaver Mfg. Co., Heating Plant Div., Springfield, Ill.
Webster Electric Co., DeKoven & Clark Sts., Racine, Wis.
Webster Engineering Co., 419 W. 2nd St., Tulsa, Okla.
Weil Pump Co., 1538 Fremont St., Chicago.
Weinman Pump Mfg. Co., 290 Spruce St., Columbus, O.
Weirton Steel Co., Weirton, W. Va.
Weiss & Co., H., 113-115 Mercer St., New York City.
Weksler Thermometer Corp., 52-54 W. Houston St., New York City.
Weldex, Inc., 7326 McDonald Ave., Detroit, Mich.
Welding Apparatus Co., 2750 W. Van Buren St., Chicago, Ill.
●Wells Mfg. Corp., 315 Seventh Ave., Three Rivers, Mich.
Werner Co., Inc., R. D., 380 Second Ave., New York City.
Western Blower Co., 1800 Airport Way, Seattle, Wash.
Western Cartridge Company, Brass Mill Div., East Alton, Ill.
Western Engineering & Mfg. Co., 1726 E. Washington Blvd., Los Angeles.
Western Felt Works, 4027 Ogden Ave., Chicago, Ill.
Western Furnaces, Inc., 950 Commerce St., Tacoma, Wash.
Western Mineral Products Co., 2602 Ed Creighton Ave., Omaha, Nebr.
Western Precipitation Corp., 1016 W. 9th St., Los Angeles.
Western Rock Wool Corp., P. O. Box 545, Huntington, Ind.
Western Silicair Products, Inc., 72 W. Alameda Ave., Burbank, Cal.
Western Wire & Iron Works, Inc., 957 W. 18th Pl., Chicago.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., Springfield, Mass., and Cleveland.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark, N. J.
Westwick & Son, Inc., John, Claude & Meeker Sts., Galena, Ill.
Wheelco Instruments Co., 847 W. Harrison St., Chicago.
Wheeling Corrugating Co., Wheeling Steel Bldg., Wheeling, W. Va.
Wheeling Furnace Corporation, Martins Ferry, Ohio.
Wheeling Steel Corp., Wheeling Steel Bldg., Wheeling, W. Va.
●White Mfg. Co., 2362 University Ave., St. Paul, Minn.
●White-Rodgers Electric Co., 1209 Cass Ave., St. Louis, Mo.
Whitney Chain & Mfg. Co., Bartholomew Ave., Hartford, Conn.
●Whitney Mfg. Co., W. A., 636 Race St., Rockford, Ill.
●Whitney Metal Tool Co., 91 Forbes St., Rockford, Ill.
Wickwire Spencer Steel Co., 500 Fifth Ave., New York City.
Wiedemann Machine Co., 1815 Sedgley Ave., Philadelphia.
Wilder Mfg. Co., P. O. Box 189, Niles, O.
Wilhelm Co., A., 3rd & Bern Sts., Reading, Pa.
Will-Burt Co., Orrville, O.
Williams Oil-O-Matic Heating Corp., 1201 E. Bell, Bloomington, Ill.
Williams-Wallace Co., 160 Hooper St., San Francisco.
Williamson Heater Co., 337 W. Fifth St., Cincinnati, O.
Willis Steel Corporation, 156 N. Academy St., Galesburg, Ill.
Will-Weld Mfg. Co., Inc., 600 S. 15th St., Omaha, Nebr.
Willy's Carbide Tool Company, 1340 W. Vernor Highway, Detroit.
Wilson & Co., Inc., 4100 S. Ashland Ave., Chicago, Ill.
Wilson Co., The H. A., 105 Chestnut St., Newark, N. J.
Wilson Company, Ludwig, 223 W. Congress St., Chicago.
●Wilson, Inc., Grant, 4101 W. Taylor St., Chicago, Ill.
Wilson Products, Inc., 348 Thorn St., Reading, Pa.
Wilson Welder & Metals Co., Inc., 60 E. 42nd St., New York City.
Wilster Air Devices, Inc., 5700 Detroit, Ave., Cleveland.
Wind-Way Fan & Ventilator Co., Inc., 527 St. Joseph St., New Orleans, La.
Wing Mfg. Co., L. J., 154 W. 14th St., New York City.
Wisconsin Heating & Draft Control Co., 214 W. College Ave., Appleton, Wis.
●Wise Furnace Co., 101 Lincoln St., Akron, Ohio.
●Wiss & Sons Co., J., 11-45 Littleton Ave., Newark ,N. J.
Wittenmeier Machinery Co., 550 N. Spaulding Ave., Chicago, Ill.
●Wodack Electric Tool Corp., 4644 W. Huron St., Chicago.
Wolverine Tube Div. Calumet and Hecla Consolidated Copper Co., 1419 Central Ave., Detroit, Mich.
Wood Conversion Co., First National Bank Bldg., St. Paul, Minn.
●Wood Industries, Inc., Gar, 7924 Riopelle St., Detroit, Mich.
Wood Steel Co., Alan, P. O. Box 112, Conshohocken, Pa.
Woodhill Chemical Co., 3708 E. 93rd St., Cleveland.
Woods-Evertz Stove Co., Springfield, Mo.
Wood's Sons Co., T. B., Fifth Ave., Chambersburg, Pa.
Woolery Machine Co., 2919 Como Ave., S. E., Minneapolis.
Woolwine Metal Products Co., Atlantic Blvd. & S. Riverside Dr., Los Angeles, Cal.
Wooster Art Wood, Inc., P. O. Box 198, Wooster, O.
Worcester Brush & Scraper Co., Div. Mason Worcester Co., 38 Austin St., Worcester, Mass.
Worcester Pressed Steel Co., 99 Barber Ave., Worcester, Mass.
Worthington Pump & Machinery Corp., Harrison, N. J.
Wyoming Stoker Worm Co., Wyoming, Pa.

X

XL Refrigerating Co., Inc., 1834 W. 59th St., Chicago, Ill.
X-Pando Corp., 43-15 36th St., Long Island City, N. Y.
XXth Century Heating & Ventilating Co., 71 Ira Ave., Akron, Ohio.

Y

Yardley Venetian Blind Co., 138 Parsons Ave., Columbus, Ohio.
Yarnall-Waring Company, Chestnut Hill, Philadelphia, Pa.
Yeomans Bros. Co., 1433 Dayton St., Chicago, Ill.
Yoder Co., 5500 Walworth Ave., Cleveland, O.
York Corrugating Co., Adams St. & WM RR., York, Pa.
York Ice Machinery Corp., Roosevelt Ave., York, Pa.
York Oil Burner Co., Inc., Jessop Place & P. R. R., York, Pa.
Young & Bertke Co., 1004-1014 Hulbert Ave., Cincinnati, O.
Young Radiator Co., 709 Marquette St., Racine, Wis.
Young Regulator Co., 4500 Euclid Ave., Cleveland, O.
Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O.

Z

Zapon Div. Atlas Powder Co., North Chicago, Ill.
Zeh & Hahnemann Co., 182-200 Vanderpool St., Newark, N. J.
Zenith Electric Company, 152 W. Walton St., Chicago, Ill.
Zim Filter Co., 5231 Hohman Ave., Hammond, Ind.
Zimmerman, R. F., Paxton & Marbury Sts., Cincinnati.
●Zink Co., John, 4401 S. Peoria St., Tulsa, Okla.

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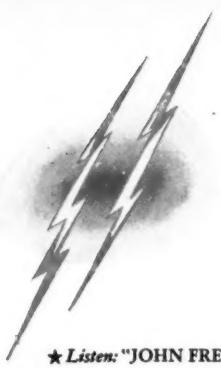
Zink Co., John.....130

MH Electrons ARE COMING!



ELECTRONICS applied to Temperature or Industrial Control is a Minneapolis-Honeywell development. Based on peacetime experience in these two important fields, Minneapolis-Honeywell engineers have been able, at the call of our armed forces, to apply electronics to vital combat and protective devices now in active use on our fighting fronts. Laboratory research and wartime testing definitely point the way to the creation of revolutionary M-H Electronic Temperature Controls, which promise, for every home-owner, a new kind of effortless comfort; and M-H/Brown Electronic Instruments for Industry, which promise, for every manufacturer, vastly more efficient and economical production. M-H Electrons, your silent super-servants, are coming! Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. S., Minneapolis, Minnesota. In Canada: Toronto. In Europe: London, and Stockholm, Sweden.

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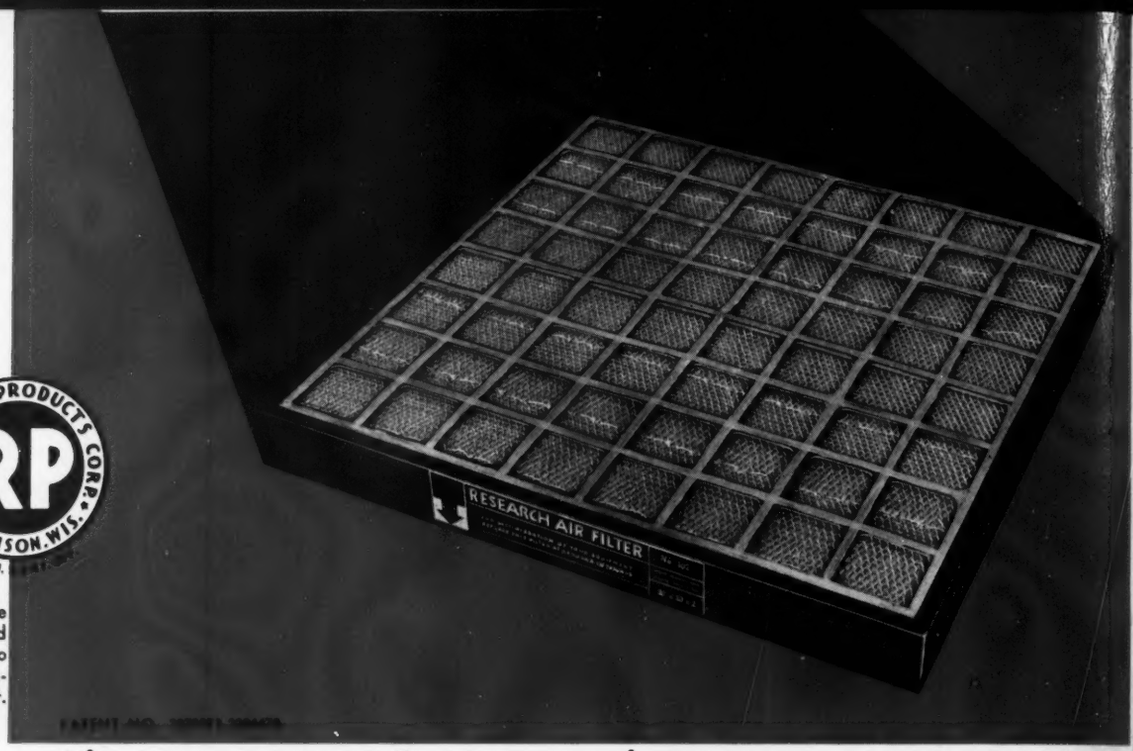

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Research Air Filters are made of 20 flame-proofed fiber layers expanded into a honeycomb pattern especially treated to catch dust.

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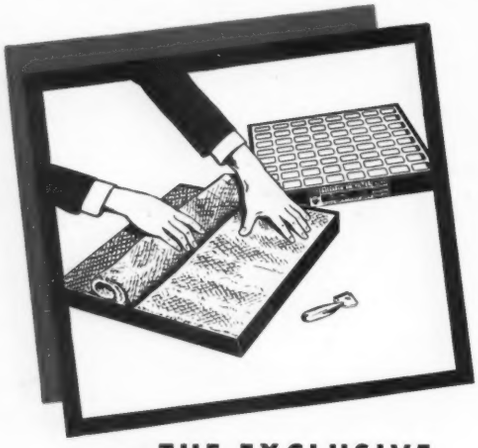

THE EXCLUSIVE RIP-CLEAN FEATURE Triples Filter Life . . .

When air restriction, due to lint, dirt and dust, hampers air flow, simply tear off two top layers. This removes surface dirt . . . and can be repeated 5 times, thus tripling the useful life of the filter.

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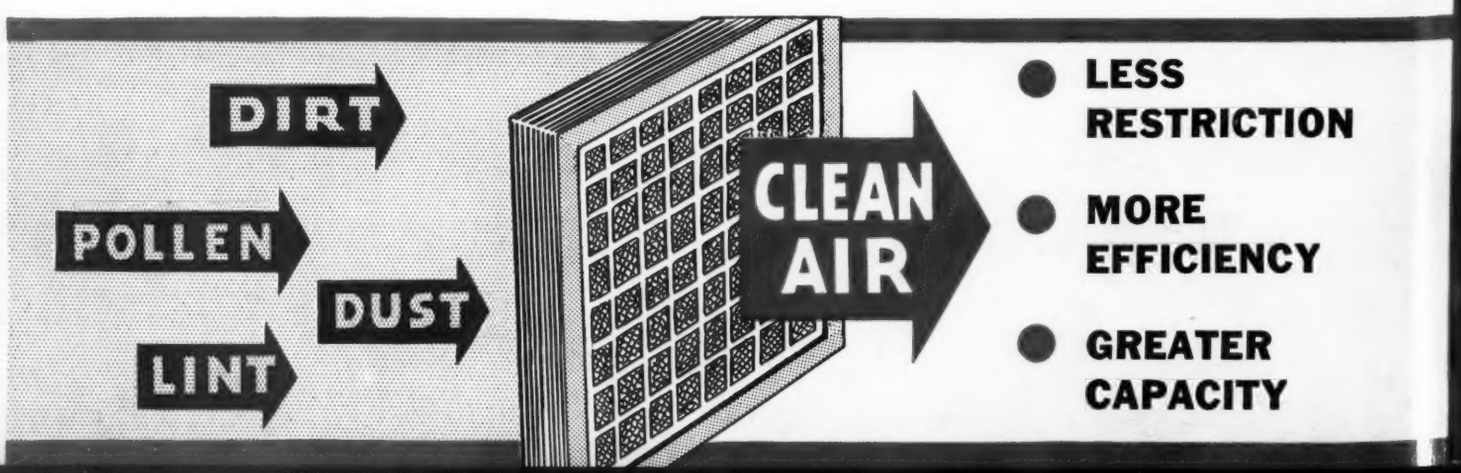
Learn how YOU can make extra filter profits selling this amazing new RESEARCH AIR FILTER. Complete merchandising program furnished—displays, selling and advertising material, all FREE.

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